NILA BANTON SMITH

Be a Better Reader

BOOK IV

CANADIAN EDITION

MARION D. JENKINSON
JEAN E. ROBERTSON
PHYLLIS C. SUTHERLAND

CURRICULUM

SKILL DEVELOPMENT IN READING

Literature
History and Geography
Science
Mathematics

PRENTICE-HALL OF CANADA, LTD.

Be a Better Rea

Nila Banton Smith

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TO THE TEACHER

This Canadian edition embodies the same basic aims and principles that have made the BE A BETTER READER series eminently successful with thousands of students. Book IV is divided in two major sections. The first is devoted to the improvement of basic reading skills; the second, to the practice of special skills needed in reading history, science, literature, and mathematics. The final chapter covers the use of reading in connection with examinations. Topics were chosen on the basis of their appeal to senior high school students and the frequency with which they appear in high school textbooks. The skills are those most often needed in studying text and reference books at this level. The special vocabularies include technical words common to the most widely used high school texts in science, history, literature, and mathematics. The book has been carefully planned to fit into and reinforce the typical high school curriculum.

The organization of this text makes it effective for either remedial or developmental instruction. Moreover, the BE A BETTER READER series does not require the services of a trained reading specialist. A *Teacher's Guide* provides a thorough explanation of method, as well as answers for all exercises.

Grateful acknowledgment is made to the following: Melvin Howards for grading the selections for readability level; Paul Panes for vocabulary work in Chapters 8-13; Harry Stonehill for phonic and syllabication lists in Chapter 9; Robert Hilton for some of the selections and preparing some of the text in Chapter 12; the G. & C. Merriam Company for permission to use the Merriam-Webster system of indicating pronunciation in word lists and activities.

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Printed and bound in Canada

SECTION ONE

IMPROVING YOUR BASIC READING SKILLS

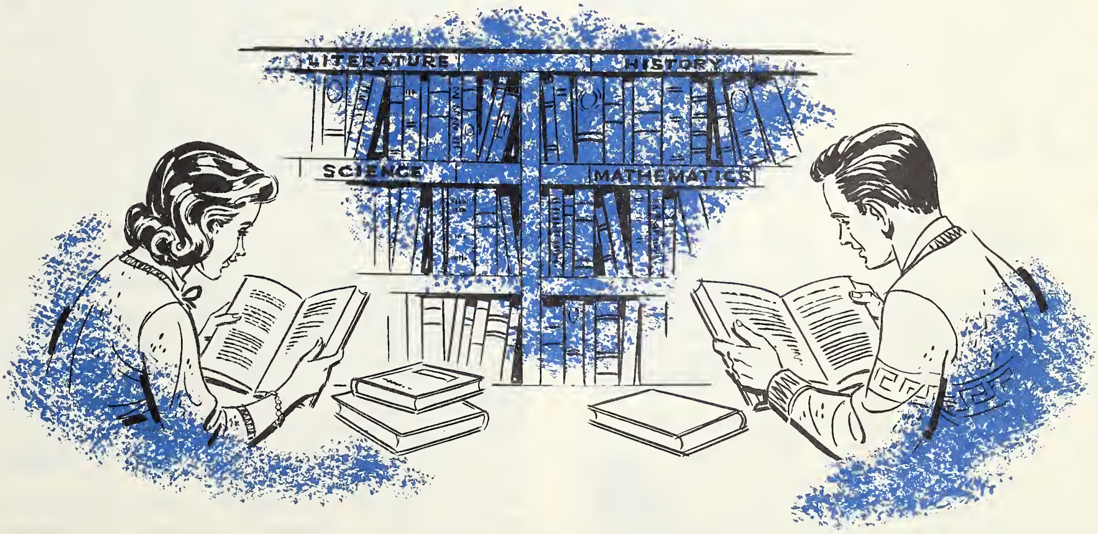
To the Student

Your reading skill may be likened to a cable. A cable is not just one large, round piece of steel. It is made up of hundreds and hundreds of tiny strands of wire bound together, interlaced and interwoven. So it is with reading. Reading is not just one general skill. When you read, you use dozens of different skills which you, yourself, weave into the kind of cable that you want to use for the reading occasion at hand. You use different combinations of skill strands when you read different materials for different purposes. For this reason you need to be master of a large number of reading skills, so that you may call into use any combination of skills that you need at any one time and for any one purpose and have them operate together at a high level of efficiency.

There are certain fundamental skills which may be used in working with almost any kind of material. There are other specialized skills needed in reading to the best advantage in different subject-matter fields such as science, history, mathematics, and literature. And many of the basic skills are applied in different ways when reading in these different fields.

The first section of this book will be devoted to practice on techniques designed to improve the basic skills you need in reading all kinds of material and for many different purposes. After you have made considerable improvement in using these common skills, in Section Two you will be given practice in applying these skills in different ways to the reading and study of special subjects; and new skills will also be introduced which you need in working in the different special subject areas of science, history, literature, and mathematics.

You can read as well as you want to. Set your own standards; then start at once to achieve them. Make use of the helps given to you in this book when studying in all of your different school subjects. These will aid you to learn your lessons faster and better.



CHAPTER 1

TAKING STOCK OF YOUR READING ABILITIES

READING AN EASY SELECTION

When you want to know how fast you are growing physically, you measure yourself. You find how tall you are and how much you weigh. Then you compare your present height and weight with your height and weight the last time you measured and weighed.

You need to do the same sort of thing often in taking stock of your growth in reading. In measuring physical growth the basic units of measurement are height and weight. In reading, the basic units of measurement are speed and comprehension.

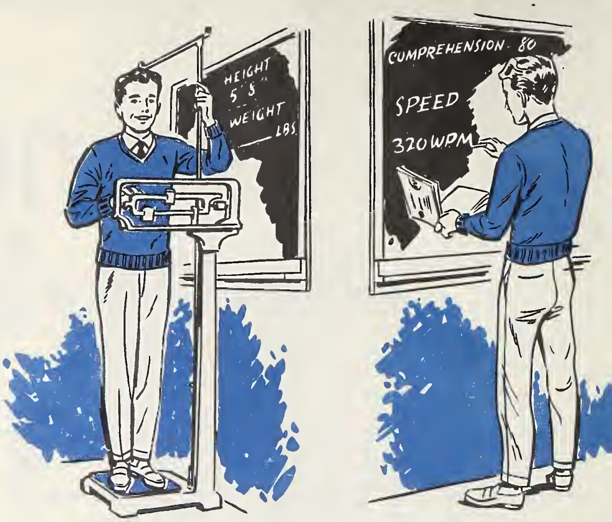
It is advisable for you to take stock of your general skills of speed and comprehension at the beginning of this book. You will have many opportunities to check your growth in these basic units of measurement as you proceed with the activities throughout the book and again at the end.

At this point find out how well you can read a scientific selection which is somewhat like the easy material that you find in many periodicals or perhaps in some of your textbooks. As you proceed through this book you may check yourself again and again on speed and comprehension while reading articles of similar difficulty. You will then be able to compare the scores made in reading this selection at the beginning of the book and similar ones as you go along, to find how much you are gaining as a result of working with this book as a whole.

Selection 1

Read the selection below just as you are accustomed to reading ordinarily. Do not hurry, and do not try especially hard to get the meanings. Just read in the usual comfortable way in which you would read any easy magazine article that you might pick up for a moment's diversion.

You'll have to time yourself in this stock-taking experience, so use a watch with a second hand. At the moment that you are ready to start, note the time in minutes and seconds, and write this information in the spaces at the beginning of the selection. If you haven't a watch with a second hand, then use a watch without a second hand or the school clock. In this case wait until the minute hand is on an even minute.



After you have recorded your beginning time, read the article at your normal rate of speed and for the purpose of grasping the writer's statements and his reasons for making them. When you have finished, record in minutes and seconds the exact amount of time that you took to read the article. You'll find spaces for recording your ending time at the end of the selection.

Ready! Start!

What Will Space People Look Like?[1]

Beginning time: Hr.______Min.______Sec.______

A short time ago man put artificial satellites in space. Sometime soon the launching of a piloted aircraft into space will be commonplace. Within 10 or 20 years spaceflight will be an almost everyday occurrence.

Once we are in space, the question arises—will we be the only ones? Will we find other intelligent beings plying the spaceways, and if so, what will they be like? We cannot predict everything, of course, but we *do* have a good idea of what space people might look like.

Suppose that this evening a spaceship from somewhere outside the solar system landed unnoticed in your neighborhood. Suppose you saw three beings from that ship walk down the road in front of your house at dusk. Would you run screaming to the telephone to call the police? No, the chances are that you wouldn't even give them a second look.

We can be almost certain that our visitors from

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[1] Ley, Willy, *Science Digest*, Vol. 43, No. 2 (February 1958), pp. 61–64. Adapted from *This Week Magazine* (Nov. 10, 1957). Copyright 1957 by the United Newspapers Magazine Corporation.

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space will not have three eyes, webbed feet, or television antennae growing out of their foreheads. Instead, scientists theorize, they will probably bear a strong resemblance to the man next door.

The reason we can make this assumption is that science has shown that the shape of a living body is not accidental. There are rules of "biological construction" that help us picture presumed visitors before they actually step out of their spaceship.

In applying the rules, we have to make just two assumptions. The first is that the bodies of spacemen consist of protoplasm like ours. The second is that they are intelligent, which is an inescapable fact once we accept the idea that they are capable of building a spaceship.

With those assumptions in mind, we can paint this portrait of the man from Planet X:

He breathes air. Water breathers might develop some intelligence, but they could not smelt metals under water. This means that any development above the level of our own Stone Age is the accomplishment of air breathers.

He eats both plants and meat. A strict plant-eater spends too much time stuffing himself with food to build the kind of civilization which is necessary to produce a spaceship. Animals which can digest meat only would not be likely to survive the occasional adverse periods which very likely occur on all planets and wipe out the less adaptable forms of life.

He's probably not much larger than the largest human being. The limiting factor here is something called the square-cube law. If you double the height of a person without changing his proportions, you have a being with *eight* times the weight. This means that a person 12 feet tall, for example, *must* be clumsy and cannot perform precision work. And precision work will be essential, of course, in building the spaceship.

He weighs at least 40 pounds, and probably more. A brain of a certain size and complexity would be required for the building of a spaceship. The brain of our spacemen would weigh at least 2 pounds. And from our studies of animals on earth, we know that a body weighing at least 40 pounds is required to support a 2-pound brain.

He has a skull of some kind. The most valuable organ of an intelligent being is his brain, and his brain must be protected in some manner against injury.

He has two eyes and ears. The "three-eyed man from space" is not a very likely creation. Two eyes are better than one for the purpose of judging distance and shape, but three would not be better than two. The same goes for ears. More eyes and ears would be useful as spares in case of accidents but earth organisms, at least, do not run to spares. We do not know the reason for this but it is logical to assume that life on other planets would not have developed along different lines.

The eyes and ears are near the brain. Information gathered by eyes and ears must reach the brain quickly in order to be useful. This transmission by the nerves is slow. Therefore the sense organs must be close to the brain to shorten the time lag between information and reaction.

He has "hands" and "feet." We know that our spacemen will walk erect. In order to survive, any being must be able to move around. But in order to build he would need something resembling our hands. Somewhere along the line of his development he would have had to free one pair of legs to allow them to become hands. The only way to do this is to learn to stand.

Also, it is almost certain that once on his back legs he would develop bending fingers and a thumb. To produce a high state of development he would need to be able to pick up things, to be able to grasp, hold, push and pull. Why not tentacles, such as on an octopus? Because tentacles can pull but cannot push effectively.

Now that we've drawn a rough portrait of the Man from Planet X, is there anything we can guess about Planet X itself?

Here again the answer is a familiar one; his planet is probably very much like ours. We would probably be able to live on it.

First of all, Planet X can't be much larger or much smaller than the earth. If it were much bigger, the gravity would be so crushingly great that life would never even get started. If it were too small, it would not have sufficient gravitational pull to hang on to its gases and there would be no "air" to breathe.

The planet's atmosphere would be much like ours. There are only two chemical combinations that are complex enough to support life: the carbon-oxygen-

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hydrogen cycle we live on, and the chlorine-fluorine, methane cycle. The latter is a highly explosive mixture and though it is conceivable that somewhere there could be a life-form living on it, it is not likely. This cycle is so complex that the chances are heavily in favor of oxygen-based life developing long before the chlorine-based form got a chance.

Planet X would have land and sea masses and a climate with drastic changes like ours. If the climate were static there would be no incentive for our visitor's race to build anything. Variable hot and cold, wet and dry seasons are needed to push him around. And, of course, there would have to be land for our spaceman to live on and water for him to drink.

All this tells that our visitor is from outside our solar system, since none of our sun's planets, besides the earth, is capable of supporting intelligent life. It also tells us something else: our space visitor is a good bit more advanced than we are.

Whether it is because his race is more intelligent, or just because Planet X is older than the earth and he has had more time to develop, we cannot tell. But the fact is that he has come from outer space. The nearest star system to us is Alpha Centauri, four light-years away. So our visitor has come a minimum of four light-years. Our science, just on the edge of interplanetary flight, couldn't even begin to tackle such an interstellar voyage. We would have a lot to learn from such a visitor.

Now that we know something of our spaceman's looks and home, how certain can we be that man actually exists in space?

Well, in our own galaxy alone there are approximately *30 billion stars.* Of course, there are hundreds of billions more in other galaxies. Scientists now think that most stars have planets, and find it almost impossible to believe that only one planet out of all the hundreds of millions is capable of producing intelligent life.

Of course lower forms of life are more likely to exist—but they would never reach the earth. The kind of creature that could pay us a visit would have to be essentially like ourselves.

Which brings us to the most interesting question of all frequently posed by science-fiction stories. What chance is there that a spaceship has already landed, and that the man next door might turn out to be the Man from Planet X?

I'm inclined to doubt that this chance exists. Suppose you or I built a spaceship and made the first landing on another planet. What would be the first thing we'd look for? Right—somebody to tell about it. I think the same would go for our visitor from space. I think he'd be too human to keep quiet.

	Hr.	*Min.*	*Sec.*
Ending time:	_____	_____	_____
Beginning time:	_____	_____	_____
Total reading time:		_____	_____

No. words 1440
No. seconds _____ × 60 = _____WPM

Checking Your Speed

Finding your "Total Reading Time." Subtract your beginning time from your finishing time. Suppose you started at 10 minutes after 10 o'clock, and you finished at 16 minutes and 4 seconds after 10 o'clock. Find your reading time this way:

	Hr.	*Min.*	*Sec.*
Ending time:	10	16	4
Beginning time:	10	10	
Total reading time:		6 min.	4 sec.

Now change the total reading time into seconds: 60 × 6 = 360 + 4 = 364 seconds.

Finding the number of words per minute. There are 1440 words in this story. Use the formula below to find the number of words per minute.

No. words / No. seconds $\frac{1440}{364} \times 60 = 237$ words per minute.

In dividing 1440 by 364 you obtain a quotient of 3.956. Multiplying 3.956 by 60 to convert this quotient into minutes you obtain 237.36. The answer then is 237 words per minute. The fraction .36 is less than .5 and ordinarily would not be counted in determining words per minute. If you have a fraction left over which is .6 or more, you may count it as 1 and add it to the whole number.

Using the plan described above, convert your total time for reading the article into seconds. Write this number opposite the words "No. seconds" in the formula above. Divide 1440 by this number and multiply the answer by 60. This will tell you how many words per minute you covered in reading the selection. Write this number opposite "WPM" above and at the end of the "Comprehension Check."

Comprehension Check

Finding your reading rate is one part of the job of measuring your reading ability. But rate means little or nothing unless you understand what you read. Below you will find ten statements based on the selection which you just read. Check the correct answer to complete each statement without referring to the selection.

After you have checked your answers, allow a score of 10 for each correct answer. Multiply the number of correct answers by 10. Write this number opposite "Comprehension score" on the next page.

1. One assumption that the writer makes in painting his portait of the man from Planet X is that his body is

made of (a) some strange material found only in people on Planet X (b) a combination of minerals and acids (c) protoplasm (d) a combination of chlorine, hydrogen, and methane.

2. The writer says water breathers could not rise above the level of our Stone Age because (a) they could not build structures under water (b) they could not find enough stones in the ocean to make all the weapons they needed (c) they could not develop hands to work with (d) they could not smelt metals under water.

3. The writer's reason for believing that men on Planet X could not live on plants alone is that (a) plants would not grow on Planet X (b) plant-eaters would have to spend too much time eating to reach the level of civilization necessary to produce spaceships (c) men could not live on plants alone (d) plants on Planet X would probably be poisonous to people living there.

4. The writer thinks that a man from Planet X might weigh (a) 100 pounds or more (b) 200 pounds or more (c) about 20 pounds (d) 40 pounds or more.

5. The writer thinks the man from Planet X would have a skull because (a) men on earth have skulls (b) to be intelligent he would need a brain and his brain must be protected (c) many animals have skulls (d) he would have to have a skull to contain his eyes and ears.

6. The writer gives this reason as to why a spaceman's eyes and ears must be near his brain: (a) it would be more convenient for him to have them there than on his legs or elsewhere (b) they would be less liable to injury (c) information from his ears and eyes could be conveyed to his brain in the shortest time (d) his appearance would be very grotesque if they were elsewhere.

7. In size Planet X is probably (a) many times larger than the earth (b) many times smaller (c) not comparable to the earth (d) not much larger or much smaller than the earth.

8. One reason the writer gives for thinking that there are drastic climatic changes on Planet X is that (a) it has the same atmosphere as the earth (b) it revolves like the earth, and parts of it would be away from the sun at times (c) spacemen wouldn't have developed inventive minds that could build spaceships without benefit of climatic changes (d) if the climate were static there would be no incentive to build anything.

9. The writer says scientists think there are planets other than our own which are capable of producing intelligent life because (a) they have seen evidences of life on Mars (b) they have determined that some planets have the same atmosphere as ours (c) they find it almost impossible to believe that only one planet out of hundreds of millions of planets is capable of producing intelligent life (d) they have a formula which they use in determining the probability of intelligent life on other planets.

10. The writer doubts that a man from Planet X has already landed in a spaceship because he doesn't think that (a) a spaceship could travel that far (b) a man from Planet X would dare to land on a strange planet where he saw human beings wandering about (c) a spaceship from Planet X could fly in our atmosphere (d) a man from Planet X would not have told somebody about his landing.

Comprehension score: ____ WPM: ____

READING A MORE DIFFICULT SELECTION

You have just read a speculative article about space people. In sharp contrast to this article, you will now read a factual selection about some amazing ancient people called the Mayas who had built their first cities as early as 320 A. D.

The picture at the right shows the home of a Mayan farmer at the present time. It is typical of homes shown in the carved decorations on some of the buildings of the ancient Mayas.

Selection 2

While working with pages 2–5, you found your speed and comprehension in reading an easy selection such as many of those that appear in popular magazines. Now you will have a chance to find out how well you can read more difficult material. The selection on the Mayas is nontechnical, but it has longer sentences and paragraphs than the article about the spaceman from Planet X. The vocabulary is more difficult, and there are many more ideas expressed than there were in the first selection. You will need to note details carefully.

You may now check your speed and comprehension in reading this more difficult selection. Write your beginning and ending times in the spaces provided for them. Read at the rate that you customarily use in reading such material. Don't try to read especially fast or put forth unusual effort in getting the meanings. For checking purposes, read just as you would ordinarily read such a selection.

The Unsolved Mystery of the Mayas [2]

Beginning time: Hr.____Min.____Sec.____

One of the most interesting of all available studies of man's behavior waits, barely sampled, just beyond our own back yard in what anthropologists call Middle America: the region extending from Central Mexico to southern Honduras and El Salvador. The southerly part of this area was occupied by the Mayas, who developed the highest civilization native to the New World.

The Mayas appear to us as an intriguing, puzzling people. Of metals they knew only gold, silver, and copper, all of which they used for jewelry, not for tools, yet they carved beautifully in wood and stone. They also painted on walls and on paper, modeled plaster, and drew with brushes, like Orientals, their best work showing rapid, strong, sensitive lines. They knew nothing of the wheel, hence did not use pulleys, yet they erected pyramids of great size, temples, "palaces," and such structures, and moved large altars and steles from the quarries to the place where they wanted them.

Without metals, but with infinite patience, they carved jade. Their ceramics, fine art, and architecture are comparable to the Greek only in a few instances, but they compare favorably to the Hindu and South Asiatic.

They had a true system of writing. To our knowledge, they indulged in the learned arts of mathematics, astronomy, and history; there are hints of others, yet to be made known. We may note that the Mayas knew how to inlay teeth and trepan skulls. Judging by what some of their descendants wrote shortly after the Spanish conquest, they had a poetic, vigorous literature. We know very little about their religion, and are still in the stage of denoting certain figures as "God A" or "God G."

They seem—again we are unsure—to have been organized into something on the order of city states, ruled, probably somewhat tyrannically, by priest-nobles. We used to believe that at their height the Mayas were innocent of warfare and human sacrifice; the evidence is that this ingratiating picture is too good to be true. But in their heyday they held interstate conferences of learned men and unified their calculations, astronomy, and written forms across hundreds of miles of territory. When they were going full blast, they abandoned the whole central part of their territory—mounds, terraces, pyramids, buildings by the hundreds, monuments, and all—and their culture petered out rapidly, leaving us with a puzzle.

To form a just idea of the importance of this change, let us turn from Maya research per se and consider it in relation to world archaeology and the study of man.

Archaeology is a humane science, a branch of anthropology dedicated to uncovering the story of man—his culture, advances, retrogressions—over long periods of time. Its potential contribution, both theoretical and practical, is great; modern thinking about mankind's course is already importantly influenced by it. In this contribution New World archaeology has a special part, and within that field Middle American studies occupy a place of unusual interest.

I have already sketched the highlights of the Mayas' "Stone Age" culture. In a general conversation, at this point, someone will insist that such advancement must mean that the Mayas were influenced from the Old World. Then the Maya scholar comes back with his crusher—and it is not only a crusher, but the final evidence of the height of the Mayan achievement. The Hindus may have conceived of zero as early as 300 A.D., but not until 700 A.D. did they produce a symbol for it and thus make possible the place system of numbers we call "Arabic." We have clear examples of large numbers written in a place system with the use of zero in Middle America from just before the time of Christ, if not several centuries earlier. The important mathematical discovery involved must have been made, according to available evidence, not later than 600 B.C., and probably earlier.

The mere desertion of the central region is a teasing puzzle. We speak of the great sites therein as "cities," but there is a question whether they were. They are imposing concentrations of pyramids, temples, assorted monuments, and buildings that may have been palaces, convents, or dormitories, but it is not at all certain that they were centers of any great concentrations of population. Is it possible that in Middle America civilization developed without cities, urbanity without urban life? If so, we must rewrite considerable portions of modern social science.

There is another great question calling for an answer. The excavations reaching furthest into the past, the stratifications most thoroughly worked out, such as those of the Carnegie Institution at Uaxactún in the Petén forest, present us with a well-advanced culture—civilized or at least semicivilized people, artists, builders of pyramids—at the earliest level. About 10,000 B.C., hunters roamed Mexico. About 2000 B.C., corn was domesticated and primitive farming communities developed. From then we take a long leap to proto-Maya centers. This is unreasonable. What is very important is the appearance that civilization developed in a classically tropical area of drenching rainy seasons. A large part of the area is underlain by a limestone formation that lets the water drain through, so that supplies of drinking water today will barely enable a sizable archaeological expedition to last through a dry season; and the whole terrain is covered by the stupendous rain forests commonly but inaccurately called "jungles." That is no setting for the development of simple cultures into high ones. It is a region hostile to man even with today's equipment, a region in which one would look for primitive hunting tribes or peoples practicing rather precarious farming in clearings made and kept open only by great effort.

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[2] La Farge, Oliver, "The Unsolved Mystery of the Mayas" (condensed). Copyright © 1958 by *Atlantic Monthly*. Reprinted by permission of Consuelo La Farge.

We expect early farming and village life to develop in fairly open, wooded country where ground can easily be cleared and worked with digging sticks and other such tools. Heavy bush or strong prairie sod defeats the primitive gardener. Felling mahogany trees twenty feet in diameter with stone tools, even with jade, seems excessive.

These paradoxes are plainly apparent. They may or may not be real; part of our trouble is that the Middle American forests are as inhospitable to archaeologists as they are to farmers. In order to determine the width of a terrace, I have had to guide myself by compass while I paced it off; I could not see the score or so meters from one side to the other. An archaeologist could perfectly well spend several seasons doing a thorough job on what he believed to be the center of a ruin, when in fact the greatest part stood a couple of hundred yards from him.

For about seventy-five years we have been seriously at work mapping the problem of Middle America, stopping now and again for a little digging. In the last thirty years, study has broadened out from the Maya zone to the whole area, and we begin to have hints of how the Maya can be reasonably related with the rest. We need more geology, a lot more climatology; the crucial question of what the now forbidding forest areas were like two and three thousand years ago awaits a final answer. We are on the threshold of the knowledge that will turn a lot of bits and pieces into a strange and wonderful story.

	Hr.	*Min.*	*Sec.*
Ending time:	_____	_____	_____
Beginning time:	_____	_____	_____
Total reading time:		_____	_____

No. words 1225
No. seconds × 60 = _____WPM

Comprehension Check

Check the correct answer to each statement. You may find more than one answer to some of the questions which could be true. You are to select one, *best* answer in terms of the information that is given in the selection.

1. The Mayas developed their civilization in the (a) southern part of North America (b) southern part of South America (c) northern part of Mexico (d) southern part of Middle America.
2. These ancient people erected pyramids and moved altars with the use of (a) wheels (b) pulleys (c) metal tools (d) none of these.
3. We know very little about their (a) art (b) religion (c) pyramids (d) calculations.
4. Archaeology is a branch of anthropology dedicated to finding information about (a) the physical organism of man (b) early man's relationship to other species (c) man's cultural advances and regressions over a long period of time (d) the possible evolution of man from his earliest form of life.
5. Evidence that the Mayas' advanced civilization was not influenced by the Old World is found in the fact that (a) they drew with brushes like the Orientals (b) their fine arts were comparable to those of the Greeks in a few instances (c) their general achievements were comparable to those of the Hindus and the South Asiatics (d) they conceived the zero before the Hindus did.
6. What is the most fundamental question about the urban life of the Mayas? It is whether (a) their cities were concentrations of buildings (b) they were centers of art (c) they were industrial centers (d) the Mayas had urbanity without urban life.
7. Which of the following facts, revealed by present-day archaeologists, suggests the existence of a problem concerning the drinking water of these ancient civilizations? (a) All water in the rain forests is contaminated. (b) All the water drains off. (c) The supply of water will barely last an archaeological expedition through the dry season. (d) No ancient drinking cups have been found.
8. Which of the following is a *very* important question yet to be answered? (a) How did the Mayas raise crops without the use of metals? (b) How did they cut down trees twenty feet in diameter? (c) How did they develop a high civilization in a rain forest? (d) How did they raise crops without domestic animals?
9. A part of the trouble which has prevented solving puzzling questions about the Mayas is the (a) hostility of the present natives (b) inability of archaeologists to decipher Mayan writing (c) lack of interest in the Mayas (d) forests which offer difficulties to archaeological expeditions.
10. In which one of the following areas do we need a lot more information about the Mayan civilization? (a) their means of constructing temples, pyramids, and palaces (b) their work with gold, silver, and copper (c) their contributions to astronomy and history (d) the geology of their country, and its climatology.

Comprehension score: _________ WPM: _________

CHAPTER 2

HOW TO READ FAST

BUILDING THE FOUNDATIONS FOR SPEED

No doubt one of the most important reading goals that you have in mind for yourself is to learn how to read faster than you now read. And this is a very worthy aim. Rapid reading enables you to cover your textbooks and reference reading in a shorter time; it enables you to get more out of your reading, for the rapid reader usually comprehends better; and it enables you to enjoy your reading and studying, rather than considering these activities as laborious tasks.

There are two very encouraging facts in regard to increasing speed in reading: (1) it is one of the easiest reading skills to improve, and (2) no matter how fast you read now you can learn to read still faster. Even excellent readers can achieve still higher goals in speed. Any person who wishes to increase his speed can do so if he understands the principles of speed reading, if he is given careful guidance in applying these principles, and if he is willing to practice.

The principles of rapid reading will be explained to you in this chapter. You will be given guidance in applying these principles, and plenty of material will be provided for you to practice upon in this chapter and others that follow. The amount of your gain in speed is up to you. Set your mind to it, and see what new goals in reading speed *you* can attain while working with this book.

Grasping Large Units of Thought

Several years ago investigators devised a way of taking pictures of the eye movements of good and bad readers. They found that the best readers glanced rapidly at fairly large, meaningful groups of words as their eyes moved over the lines of print. Poor readers, on the contrary, usually proceeded by picking up at each glance small meaningless units of a few letters, a word, or perhaps two words or parts of two or three words. In the light of this information, it was thought that a person could become a more rapid reader if he could learn to grasp large, meaningful units of thought at each eye pause. It was also thought that a person's comprehension might improve if he learned to read in thought units rather than in separate words or in other small units that do not have much meaning in themselves. Large numbers of experiments since that time have proved that both of these things are true. Those who read most rapidly and get the most out of their reading grasp large meaningful units of thought as their eyes travel rapidly over the lines of print. So the first step toward increasing your present speed is to learn to grasp increasingly longer units of thought than you do now.

Something else that you need to do is to quicken your pace. As you can walk faster when you want to, so can you read faster when you want to. Just consciously push yourself to higher speeds.

Breaking Yourself of Undesirable Habits

Perhaps you have some habits that will stand in the way of your progress in learning to read faster. Some people develop such habits in the early grades, and these habits stay with them all through their school years and in life beyond. These bad habits are pointing to words, reading with the lips, vocalizing in the throat, head movement from left to right as you read across the page and back again. You may still have one or more of these habits of which you are not conscious. It would be well to check yourself to find out if you have any such habits at this time.

Read the paragraphs below just as you normally would read. Notice as you read whether your finger automatically "flies" to the lines and moves across them, pointing to each word.

> In space, man is his own worst enemy. To keep him alive and alert, science is developing protective devices. A sealed spaceship cabin would carry its own self-contained environment. Five pounds of common pond algae growing in a tank of sewage will give off enough oxygen for one man's needs. Purified and dried, this plant can be made into food pills. The cabin's water supply can be distilled from moisture in the air.
>
> Since they are beyond the pull of earth's gravity, the space pilot and the objects he uses inside the spaceship's cabin will have no weight. A constant acceleration of the ship would simulate gravity. But this may not be necessary: Research into weightlessness may teach man new methods of movement.[1]

Did you actually point with your finger as you read? Or did you want to point?

If you have the habit of pointing, or the tendency to point at times, because it seems to make your reading easier, you must take note of this and stop yourself every time you do it. Your mind can leap across the lines of print much faster than your finger can move. Don't let your finger hold down your speed!

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[1] "Man's New World." *Life*, January 6, 1958.

One way to break yourself of this habit is to hold the book or magazine that you are reading with *both* hands, the left hand holding the left side of the book and the right hand grasping the right side. Then your fingers won't be free to point.

Now check yourself on lip movements. Place your finger lightly over your lips while you read the paragraphs below. Note whether or not you feel your lips moving against your finger.

> Return to earth from a space journey poses vast problems to the engineer and dangers for the pilot. A spaceship plunging into the atmosphere directly at earth would be destroyed in four seconds by air turbulence, which would shatter the ship with blows of thousands of pounds per square inch, and by air friction heat, which is able to vaporize any material known to man.
>
> To prevent the effects of air turbulence and heat, a space craft would spiral around the earth in a gradual, slowing descent. Or it would take brief "bites" out of the atmosphere, dipping down for less than a minute, then pulling up slightly before the next dip. The craft could be further braked by using reverse rockets, drag balloons, or parachutes.[2]

Did your lips move? If so, place your fingers lightly over them when you are reading. When you feel your lips moving, hold them still. Holding a pencil tightly between your teeth is helpful also in breaking this habit. Perhaps you can think of some other way to keep your lips from moving. But, whatever you do, stop them! You can read much faster than your lips can form the words.

Now check to see if by any chance you move your head while reading. Hold your hand firmly under your chin. Notice if your head moves, taking your hand along with it, as you read these paragraphs:

> When I looked at Mars through the 100-inch telescope in the early evening, the polar cap presented its usual smooth, unbroken appearance. But when I next looked at Mars directly, about midnight, to my astonishment there was a great gash in the polar cap.
>
> Although this rift in the polar cap was new to me, a little investigation in the library revealed that it has been known for at least a century. It appears regularly in the south Martian spring about a month before the beginning of summer.
>
> As the snow melts the rift lengthens until a portion of the cap is completely detached from the main snow field. This detached part breaks up into several white spots, presumably due to snow lingering on elevated ground. These white spots are the famous "Mountains of Mitchel," the only markings on Mars that rate the name of mountains.[3]

If you found that you moved your head as you read, then continue to nest your chin in your hand whenever you read, and hold your head still every time it starts to move. Head movement, like all other physical movements that accompany reading, holds you down to a much slower rate than that at which your mind is able to leap ahead and grasp meanings when unimpeded by physical movements.

Check yourself next on the possibility of vocalizing words in your throat. Place your open hand tightly over your throat. Read the paragraphs below. Note whether or not you can feel a slight movement against your hand.

> Ages ago when man was emerging into the early light of history his fierce little shaggy-haired offspring made the discovery that there was rare fun attached to a game played on the ground with small hard earthen pellets. Juvenile cave-dwellers invented the game of marbles. Among neolithic remains, scientists have discovered small spheres which they have declared too small for projectiles and have concluded were for sport. The British Museum contains marbles used by Egyptian and Roman children.[4]

Did you feel slight movements in your throat? If you have this habit, hold your hand over your throat when you read and control the movements whenever they begin to take place.

Looking for Meaningful Thought Groups

The paragraph below is divided into meaningful thought groups. See if you can read it, taking in an entire group of words at each quick glance.

> In June of 1849 / a slow-moving, bearded man of thirty-five / strolled up the long street / of cottages which forms the hamlet / of Barbizon, / near Fontainebleau, in France. / At the top / of the village he stopped at a three-room cottage. / The gossips watched him, for this man came from Paris, / thirty miles away, where there was / barricade fighting and turmoil. / Within a day or two / the same man appeared again among them, / this time as tenant of the cottage, and the folk of Barbizon / accepted him / as one of themselves, / for now he wore a blouse / and was shod / in the wooden sabots / of the peasant. He was a painter, it was said, / but he wore the loose clothes / as if he had never known any others, / and his talk showed / that he knew the ways / of peasants from experience.[5]

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[2] *Ibid.*, p. 58.

[3] Richardson, Robert F., "The Face of Mars," *If—Worlds of Science Fiction* (June 1957). Copyright 1957 by Quinn Publishing Co., Inc.

[4] "Prehistoric Boys Played Marbles Too." *The Mentor*, April 1927, p. 62.

[5] Levick, M. B., "Millet's Cottage, A Shrine of Art." *The Mentor*, February 1924, p. 41.

ACTIVITY 1

Now mark the selection below into thought groups yourself. Divide it into meaningful phrases in about the same way as the paragraph above was divided.

In that little house, which in due time was enlarged bit by bit as his family grew, Jean François Millet lived like the real peasant he was, until his death came twenty-six years later. There, ten years after he had settled in Barbizon, he painted "The Angelus," which was scorned at first, but became the most popular picture of the nineteenth century.

Today his little cottage, after having been turned to ordinary uses for years, is a memorial to Millet. Through the devotion of a follower of the artist his home has been purchased as a museum and restored to the condition in which it was when Millet died. Though this museum has been open only since 1922, each day many visitors come to see its mementos, and recognition of the museum by the French Government is not improbable.

When he died, the cottage was filled with his work, including many partly finished canvases. He was a slow worker: he created pictures with the patience of a peasant tilling the soil, and he would make sketch after sketch and would return again and again to his subject till he was satisfied. In thirty-one years he produced eighty pictures. Many were incomplete, and designs from his studio were sold after his death for 321,034 francs, then nearly $65,000.[6]

STARTING YOUR SPEED CAMPAIGN

When you start a campaign to increase your speed, it is advisable to begin with easy, interesting material. The selection below is easy and you will certainly find it interesting. You have, no doubt, read about the unusual things that ants do, but did you ever hear of ants raising their own crops? The picture to the right shows five underground cells which ants have planted with mushrooms. One cell on the right remains unplanted.

Applying Speed Techniques

Now you will have an opportunity to apply what you have learned about rapid reading.

Read the next four selections, pushing yourself to read at as high a rate of speed as you can and still get the thought. If you have any habits that interfere with speed, watch them and correct them as you go along. Try to catch large thought units at each fleeting glance.

Record your beginning and ending times for each selection, and compute your rate and comprehension for each selection in the same way that you did on pages 4 and 7. See if you can read each selection faster than you read the one before, and with equal or better comprehension.

Full speed ahead. Ready! Start!

Selection 1

Ants That Raise Their Own Crops [7]

Beginning time: Hr._____Min._____Sec._____

"Go to the ant, and consider her ways," said wise King Solomon. Without doubt the wise monarch of old had observed families of the ant species thriftly laying up stores of food against times of dearth. But even Solomon would have been surprised to learn what has only recently been discovered. Some ants do not content themselves with harvesting the casual bounties of nature but actually plant their own gardens and gather in the crops when they are ripe.

The gardens are miniature mushroom cellars, for they are underground, and the produce they yield consists of a sort of mushroom or fungus. Sometimes the ants' gardens are on the floor of the cellar, and sometimes they are suspended from the roof.

All mushrooms grow by means of tiny threads, usually white or gray, called *hypha*. These threads extend very rapidly through earth which is rich and filled with fertilizer. But where do the ants get this rich soil?

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[6] *Ibid.*, p. 41.

[7] *The Mentor*, Vol. 15, No. 7 (August 1927), p. 58.

kohlrabi (kōl′rä′bĭ): A kind of cabbage plant.
provender (prŏv′ĕn dẽr): Food or provisions.

They compound it of various substances, mainly consisting of vegetable material. Some of these busy insects are called "leaf-cutting ants." It is known that they actually cut out bits of leaves of various plants to provide the right soil for their mushroom cultures. Sometimes they select the petals of flowers instead of foliage. One species of these ants living in South America has received the name "parasol ants." When these ants march home after a leaf-cutting expedition, they have the appearance of carrying green sun umbrellas to protect themselves from the heat!

To the finely divided leaves and flowers the ant gardeners add bits of refuse from various sources, including the dirt scraped off their own bodies. Ants are extremely neat, and they customarily carry a fine-tooth comb with which to keep themselves clean. Another curious thing: different groups of ants raise special kinds of fungus, unmixed with any other kind. Some of the workers have the special task of weeding and sorting, just as a farm boy keeps rows of corn free from intruding weeds.

It was long a mystery as to how the ants maintained this purity of culture even in new nests. Recently it has been discovered that each young queen just before starting out to build a nest takes a final meal of fungi and packs part of it away in a little pocket in her jaw. When she founds a new home, her first care is to collect material for a garden. Then she proceeds at once to supply food in readiness for the offspring that will hatch from the eggs she lays.

A singular feature about these ant mushrooms must be mentioned. The gray-white threads, instead of being straight as in those grown naturally, form little knobs or balls at intervals.

This is supposedly due to some treatment given by the ants, but as yet no one knows of just what it consists. Of course the swelling increases the yield of the crop within a given area.

Sometimes these protuberances are called "ants' kohlrabi." This curious vegetable, which is related to both the turnip and the cabbage, presents an analogy in its growth to the ants' mushroom. The edible part consists of knobs that occur at intervals on a long stem.

Fungus-growing ants are usually natives of tropical or subtropical parts of North and South America. One species is found in Texas quite plentifully, and some specimens have been discovered as far north as New Jersey.

That these fungi are very nutritious is proved by the fact that they furnish the entire provender both of adult ants and young offspring.

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

No. words $\frac{565}{\underline{\qquad}}$ × 60 = ____WPM
No. seconds

Comprehension Check

Write "Yes" if the statement is true; "No" if it is false. Allow a score of 10 for each correct answer.

______ 1. The wise king of Biblical times mentioned in this selection was King James.

______ 2. Sometimes the ants' gardens are suspended from the roof.

______ 3. The ants get the fertile soil for their gardens from fertilized soil in gardens cultivated by man.

______ 4. Some ants are called "parasol ants" because they carry mushrooms over their heads.

______ 5. The ants you read about carry fine-tooth combs with which to keep themselves clean.

______ 6. Some ants divide their workers into groups, each one of which does a specialized kind of work such as weeding or sorting.

______ 7. When a queen starts out to build a nest, she has worker ants carry fungi in their jaws to use in planting a new garden.

______ 8. A peculiar feature about ant mushrooms is that they have little knobs at intervals instead of growing in straight threads.

______ 9. Fungus-growing ants are found nowhere except in tropical or subtropical parts of the two Americas.

______ 10. The fungi grown by these ants provide the entire food supply of both adult ants and their young.

Comprehension score: ____ WPM: ____

Selection 2

Did one of your pets ever do anything that would indicate he had a sense of humor? If so, you will want to find out about some things pets of others have done which give evidence of a sense of humor. See how fast you can read this selection.

Have Animals a Sense of Humor? [8]

Beginning time: Hr._____Min._____Sec._____

Robert Dickey tells us that dogs have humor, and I believe that other animals have, too. We know that some animals laugh. Hyenas laugh—but that isn't humor. Far from it. A hyena's laugh is a menace and a warning. We might say the same, however, for the laugh of some human beings. It isn't the laugh that betokens humor: it is the feeling back of it. A crow laughs in mockery; a parrot laughs in mimicry; but a dog laughs and barks in play and sport, just like a human being.

I have seen a dog laugh. It isn't a man's laugh. He doesn't "haw-haw!" but he certainly shows his appreciation of fun in a way that is as near a laugh as a dog can make it. Just by way of illustration—an incident of a number of years ago: A friend of mine had a mild dry battery for little experiments in his home, and one day he put one of the electrodes down in a pan of water and coaxed his dog to drink at the pan. Then, holding the other electrode in one hand, he took hold of the dog's tail. The dog got a nice little nip, jumped and broke away. After that he put a pan of watery milk where he knew the cat would drink, and repeated the electrode trick. A cat is full of electricity anyway, so we looked for interesting results. As soon as the dog saw the cat walk towards the pan, he approached eagerly and sat down to watch the fun. When the cat took a lick and felt the electricity, her tail became twice its usual size and she went up in the air. And the dog actually *laughed*. He looked at the cat, then up at us, tongue out, panting and choking with laughter.

Three chipmunks were scampering around my cottage in the woods. They finally took to a nearby beech tree and continued their frolic by leaping from branch to branch. The apparent leader, who had previously exhibited great skill in his leaps, suddenly alighted on a diminutive branch that wouldn't bear his weight and slid to the ground. What a clattering the other two set up as they "laughed" at the confident one who had missed his leap. He did not chatter!

If anyone has any doubts about bears having a sense of humor, let him talk to Ernest Thompson Seton or to Mr. and Mrs. William Finley. The story of Cuffy and Tuffy, the little bear pets of the Finleys, will be answer enough. Mr. Finley shows on the screen a set of films picturing Cuffy and Tuffy at play. After seeing those films most people would agree that the evidence for animal humor was in them. One scene shows Cuffy and Tuffy about to feed. Two large platters of food are placed before them. Cuffy shoves Tuffy—and the food is forgotten. In the rough-and-tumble scrimmage that follows both bearkins are completely smeared with the contents of the platters—which they finally lick off while reviewing the fun they have had. As Mrs. Finley said, "Cuffy and Tuffy would rather scrap and play jokes on one another than eat." And that about expresses the relations of these little playmates—as full of fun as a pair of children. They were a constant source of amusement to themselves and everyone else who watched them.

Oh, yes, we may be sure that bears have a sense of humor.

	Hr.	*Min.*	*Sec.*
Ending time:	_____	_____	_____
Beginning time:	_____	_____	_____
Total reading time:		_____	_____

No. words 570
No. seconds × 60 = _____WPM

Comprehension Check

Write "Yes" or "No" before each statement.

_______ 1. The hyena's laugh does not indicate a sense of humor.

_______ 2. A dog really laughs aloud.

_______ 3. The dog mentioned did not show a sense of humor when his own tail was nipped.

_______ 4. This dog did not show a sense of humor when the cat was affected by electricity.

_______ 5. The chipmunks were observed when they were showing evidence of humor in a city park.

_______ 6. Two of the chipmunks laughed at the other when he was unable to climb a tree.

_______ 7. The chipmunk who had the misfortune laughed, too.

_______ 8. The bear pets belonged to Mr. and Mrs. Finley.

_______ 9. Tuffy and Cuffy would rather play than eat.

_______10. The owners of Tuffy and Cuffy have evidence of animal humor in films which they can show to people.

Comprehension score: _________ WPM: _________

Did you increase your speed and maintain or increase your comprehension score? This is what should have happened. With practice and determined effort, you should make some growth in reading each selection in this chapter. See if you can read the next selection, *Killer Plants*, still more rapidly and with good comprehension.

---

[8] Editorial, *The Mentor*, May 1929.

You know that animals devour one another, but did you know that some plants also devour animals? Read the story below to find out what some of these plants are and how they capture animals. Your interest in finding out about these plants should help you in reading this story very rapidly. See how fast you can read the story below.

Selection 3

Killer Plants [9]

Beginning time: Hr._____Min._____Sec._____

When science-fiction writers picture weird planets inhabited by strange creations half animal, half plant, they are not jumping off the deep end of imagination. For right here on our own earth there are nearly 500 kinds of just such incredible plant-animals.

They are the carnivorous plants which turn not only to the air or the ground for food but also to living creatures of the animal world. As craftily as any hunter, these killer plants seem to lie in wait for their victims, then seize and eat them.

They use this un-plantlike method of getting nourishment because they generally grow in swampy, acid soils lacking in nitrogen, which all plants need to survive. And the ways in which they accomplish this feat rank them among nature's greatest wonders.

Hundreds of kinds of these carnivorous plants flourish in Canada, among them the fabulous bladderwort, an aquatic plant which is found near the surface of the water. Its leaves are studded with tiny bags that have trap doors that open in but not out.

An insect swimming unsuspectingly along sees nothing dangerous about this ordinary-looking plant. But when it touches one of the long, pointed hairs at the opening of the bag, the bag inflates. As it does so, the door that has been shut opens. Water rushes into the bag, carrying the bug with it. Here the bug dies a slow death in his little prison.

The miniature ogre of the plant world, the butterwort grows along the borders of the swamp or clings to sheer water-sprayed rocks close to a swift-moving stream. The flower of the butterwort is often mistaken for a large rich violet. The leaves, however, are a ring of greasy, succulent, yellow-green leaves, covered with glandular hairs on which is secreted a colorless fluid. An insect alighting on the leaf is held prisoner by the sticky surface. The edge of the leaf rolls up to prevent the insect's escape and acid fluids flow generously. This acid digests the animal matter then the leaves unroll in readiness for their next victim.

Another botanical marvel at the bug-catching business is the pitcher plant, a gaudy swamp-dweller which does not wait for its victims to blunder within reach. It lures them by its brilliant color (which may be purple, yellow, red, etc., according to the species), or, in some cases, by sending out an odor attractive to bugs—a principle recently employed in patented flytraps.

The victim ventures inside the pitcher-shaped blossom and finds itself a container, partly filled with fluid, from which it suddenly wants to escape. But the short hairs pointing downward into the plant are an impassable barrier which the bug slid over easily coming in but now cannot travel against. Eventually, it gives up the struggle and slides into the fluid.

Nature has created few more harmless-looking plants than the sundew, and perhaps none more deadly. The rounded leaves of this plant are covered with a fluid that glitters in the sunlight. Some insects are attracted simply by this gleaming beauty—others by the fluid's odor.

Let an insect alight on one of these ornamented hairs and, instantly, dozens of nearby hairs lean toward it. Before the victim can escape, they have enfolded it. Whereupon the hairs become digestive glands which extract the food value from their captive, then return to their former positions to await another victim.

Some of the carnivorous plants are but a few inches high, few of them grow much over three feet. But it

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[9] Adapted from Wood, Madelyn, "Killer Plants." Reprinted by permission of Esquire, Inc. © 1955 by Esquire, Inc.

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carnivorous (kär nĭv′ô rŭs): Feeding on flesh.
bladderwort (blăd′ẽr wûrt′): A plant with bladder-like leaves.

is not too wildly imaginative to picture a world inhabited by far larger versions. Perhaps, if the biological history of our planet had taken a little different course, even man-eating plants might have developed.

	Hr.	*Min.*	*Sec.*
Ending time:	_____	_____	_____
Beginning time:	_____	_____	_____
Total reading time:		_____	_____

$\frac{\text{No. words} \quad 620}{\text{No. seconds}} \times 60 =$ _____WPM

Comprehension Check

Write "Yes" or "No" before each statement.

______ 1. There are nearly 1,000 kinds of plant-animals.

______ 2. Plants that devour animals for food do so because they generally grow in soils lacking nitrogen.

______ 3. The plant that catches insects in bags is the bladderwort.

______ 4. The pitcher plant has long tendrils which it sends out to grasp insects.

______ 5. The pitcher-shaped blossom of the pitcher plant is partly filled with honey.

______ 6. An insect which ventures inside the blossom of the pitcher plant cannot escape because the blossom closes up.

______ 7. The butterwort is often mistaken for a large rich purple violet.

______ 8. The butterwort secretes acid which digests the insect.

______ 9. The sundew plant extracts food value from insects through hairs which become digestive glands.

______ 10. Several of these carnivorous plants are large enough to devour a man.

Comprehension score: _____ WPM: _____

Selection 4

Were you ever in a haunted house? You can be in one. You can haunt it, yourself, if you want to. And while you read this ghost story, "haunt" the page with the fastest reading you've done so far.

You, Too, Can Haunt a House [10]

Beginning time: Hr._____Min._____Sec._____

It may come as a surprise to know that most of the spooks you meet from the spirit world are born in a mail-order factory in Columbus, Ohio.

And you should see Aunt Emma's shadowy form in broad daylight.

Before she enters a darkened room she is merely a luminous wad of silk or papier-maché. As a ghost she is kept under lock and key in Columbus by an extraordinary mortal who says candidly, "The world wishes to be deceived, so I deceive it."

The obliging gentleman is Robert A. Nelson, probably the world's finest expert on ghosts and the only one who makes a business of haunting houses. His made-to-order ghosts, gimmicks, and black magic are shipped all over the world.

Nelson's ghosts are generally regarded as better than the real thing. He himself admits, "Ordinary ghosts are much too high-strung to stand the pressure of modern life. Mine are steady and reliable." They are practically indestructible.

He invented his first ghost (from an old sheet) when he was only 9 years old to get rid of a neighborhood bully. At 11, with his brother Larry, he was doing a professional "mind-reading" act. They had a secret code of communication between them. This and a few magic tricks sometimes brought them a nice sum each night while they were still in their teens.

But in the firm belief that naturally strong occult powers should be strengthened occasionally by new mechanical devices, they started their own manufacturing firm. Promptly they were deluged with orders.

Nelson's brother left the business to go on the road and became a famous children's magician in California.

Bob Nelson has remained one of the United States' outstanding magicians. His slickest trick is in manufacturing ghosts to order. His ghosts range from a dancing, swaying, unbreakable, instantaneous model (operated like a roll-up window shade) to an uncanny, life-size, luminous skeleton—with a wide variety of disjointed bones and scare masks in between.

He'll sell you a package ghost show if you wish. The fakes usually go in for astral lights, floating spirit faces, voices, kisses, knockers, slates, and assorted other spook props.

Most of these spirit-world gadgets Nelson invents

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[10] Browning, Norma Lee, "You, Too, Can Haunt a House," *Science Digest*, Vol. 41, No. 6 (June 1957), pp. 53–56. Copyright Chicago *Tribune*, Chicago, Ill.

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papier-maché (pā′pẽr mă shā′): A hard substance made of paper.
clientele (klī′ĕn tĕl′): A body of customers.

himself, and they comprise the major part of his business. However, he also deals in crystal balls, fortune-telling cards, dream books, and magic gadgets, for which there seems to be a demand.

Nelson estimates that the American public spends several million dollars a year trying to get inside tips on the future, from fortune tellers, palm readers, and other types of soothsayers. They're mainly interested in money, love, and health, in that order. For some reason they depend mainly on the ghosts of the dead to give them the right answers.

In recent years Nelson has also provided a "Haunted House Service." He believes the demand has arisen from the shortage of real haunted houses and over-crowded conditions in our modern society. Most of his requests come from people who want to play a joke on someone or want to scare away unwelcome guests who have overstayed their visit. Nelson prefers to haunt new houses, especially those not yet built.

He goes over the house plans with the architect, decides on locations for the built-in ghosts, knockers, and strangled screams, some of which need mechanical devices to help them function. These secret devices are kept locked in a safe.

Nelson is a tall, distinguished looking man with graying hair, and a healthy respect for fair play. He believes most of his clientele are conscientious and "trying to give the public a fair shake."

After all, he emphasizes, people *want* to believe in strange things and in the right setting they will believe almost anything. Even ghosts. And real ghosts are hard to find these days. Probably because they've been scared off by Bob Nelson's commercial creeps from Columbus, Ohio.

	Hr.	*Min.*	*Sec.*
Ending time:	_____	_____	_____
Beginning time:	_____	_____	_____
Total reading time:		_____	_____

$$\frac{\text{No. words } 660}{\text{No. seconds}} \times 60 = \_\_\_\_\text{WPM}$$

Comprehension Check

Write "Yes" or "No" before each statement.

_______ 1. Most spooks are born in a factory in New York.

_______ 2. The Nelson brothers believe that naturally strong occult powers should be strengthened occasionally by new mechanical devices.

_______ 3. Mr. Nelson's ghosts are fragile and have to be handled carefully.

_______ 4. He invented his first ghost when he was a boy 9 years old.

_______ 5. He started his manufacturing business in partnership with his son.

_______ 6. He manufactures things other than ghosts.

_______ 7. He believes that the demand for the "Haunted House Service" has arisen because of a shortage of real haunted houses and over-crowded conditions.

_______ 8. When someone wants a haunted house, Nelson goes over the plans with an electrician.

_______ 9. Nelson has respect for fair play.

_______ 10. He prefers to haunt old houses that have been occupied a long time.

Comprehension score: _____ WPM: _____

Summary

Did you read the last one or two selections faster and with better understanding? Continual practice in trying to read faster will enable you to reach whatever speed goal you desire. Force your speed in each timed-reading selection in this book. Practice reading other easy material fast, also. Spend fifteen or twenty minutes each day in rapid reading practice at home or at school. At the beginning use easy material for this practice. Time yourself and check your comprehension. You may do the latter by having someone question you on what you have read; or by trying to tell yourself what you have read, then by checking with the text to see how accurate you have been in recounting the information given. After you have established new habits in reading easy material rapidly, then try to read faster in working with more difficult material.

CHAPTER 3

SHOPPING BEFORE YOU READ

HOW TO PREVIEW

You shop before you buy a suit or dress. You carefully examine the new garment before you decide to purchase it. You size up its color, style, material, unusual features, gathering a considerable amount of information about the garment as a whole before you even try it on.

The same thing should be done very frequently before you start reading an article, chapter, or book. Usually a reading selection has certain characteristics which you should examine before you read it, just as a garment has certain features which you want to consider before you buy it. If you will study these characteristics, they will afford you very valuable pre-reading insights.

This reading skill is called "previewing." In some cases the preview will provide you with all of the information that you desire, and you won't find it necessary to read the selection at all. In other cases the preview will whet your appetite, increase your interest, and strengthen your personal motive for reading the material that you are about to read. In these cases when you actually do begin to read, you will find that your pre-reading insight has paved the way for speedier and more comprehensive coverage of the printed pages.

The first step to take in making a preview is to study the title. The title holds a world of information for you. It tells you concisely what the selection or chapter is about. It gives you a quick cue as to the topic of discussion. Consider the title carefully. It may be a deciding factor in determining whether or not you want to read the selection. If you decide that you do want to read it, then you have advance information of the subject to be discussed and can read in terms of the promise that the title holds out to you.

Often a subtitle appears under the main title, and sometimes two or three short paragraphs appear in boldface or italicized type as an introduction to the chapter or article. If there is a subtitle, or if there are introductory paragraphs in special type, study these as a part of your preview. It is just as important for you to consider these features before you read as it is to size up special features in regard to the cut or style of a garment before you buy it.

Next, glance through the selection to see if subheadings are used. These subheadings usually appear in boldface or italicized type. If you find that there are subheadings, a quick survey of these will be very valuable to you. You should consider each one for the information which it actually gives or implies. These subheadings are the major topics in the author's outline. They reveal to you the important topics in the structure of the selection or chapter as a whole. There will be occasions in which a preview of these subtitles will tell you all you want to know. At other times they will serve to stimulate your interest in reading the different sections and will open doors to better understanding of the text that follows.

If any visual aids are furnished, next turn your attention to them, and study these visual aids for their significance. Illustrations may accompany the selection. If so, look at them carefully. They will aid your comprehension by giving you a vivid mental picture of people, things, and locale dealt with in the text.

If maps are provided, study them. Your reading will be more meaningful if you have precise geographical locations in mind. Often graphs and charts are provided. If so, study these carefully before you read the article. They will give you a quick grasp of relationships and proportions amongst data that will be discussed in the text.

PREVIEWING A SELECTION

Now try these previewing techniques in working with the selection on pages 17–18.

1. Study the title and think about its meaning.
2. Study the subtitle. This tells you more specifically about whom the selection is written, and states the real subject of the selection.
3. Next examine the picture carefully. Note the size of the cabin, the clothing of the man inside and his sitting position. See if you can identify some of the gadgets that surround him.
4. Read the paragraph in italics to the left of the picture.
5. Read the italic subheadings.
6. Take the "Preview Test" at the bottom of page 18. You'll probably be surprised to find how much information you have gotten just by preview, and without reading into the text of the selection at all.
7. Finally read the selection all the way through, timing yourself. You will find that your preview has made it much easier for you to grasp the information in the selection as a whole.
8. After you have read the entire selection, take the "Reading Test" at the bottom of page 18 and top of 19.

Selection 1

You read a speculative selection about space travel. Now you are to read a true story about space travel. This story is about Donald Gerard Farrell, who spent seven days in a completely sealed test chamber. The experiment was carried out to find if a human being could survive a trip to the moon.

Rehearsal for Space [1]

Farrell Ordeal Valuable Space Test

Beginning time: Hr._____Min._____Sec._____

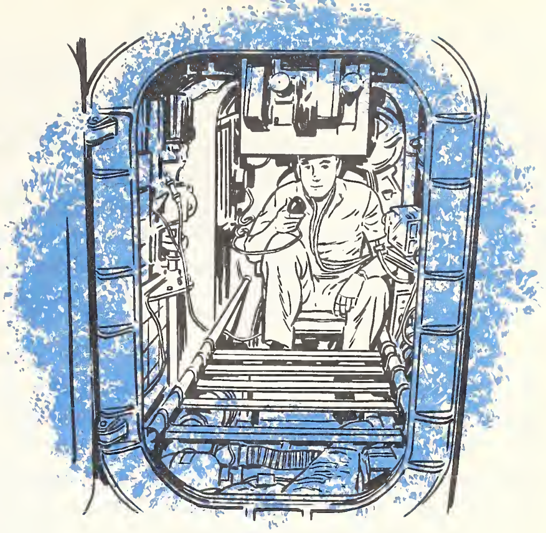
Clad in floppy hospital coat and pants, Airman Donald Gerard Farrell grinned "Well, here goes," and clambered into a weird contraption at Texas' Randolph A.F.B. It looked like a home furnace—3 ft. wide, 6 ft. long, 5 ft. high—encrusted with tanks, pipes and electric cables. It was firmly anchored to the concrete floor, but it was the Air Force's closest approximation to the type of cabin in which a man might solo into outer space. Airman Farrell, 23, Manhattan-born son of a Wall Street accountant, was to make a seven-day simulated trip to the moon and back. Though he would not be exposed to three of the major hazards of space flight—acceleration, weightlessness and cosmic rays—the Air Force's space medicine men wanted to study his reactions, both physical and emotional, to confinement and fatigue.

Cameras and Electrodes Go Into Action

Farrell tried to get comfortable in a seat like a dentist's chair. He wore dark glasses, because bright light beat continuously upon him for the still camera (taking a picture every 75 seconds) and the television camera transmitting uninterruptedly by closed circuit to a nearby viewing room. Electrodes were taped to Farrell's arm and chest: he plugged in the leads so that doctors from the Air Force's School of Aviation Medicine could keep watch on his pulse and breathing.

14-Hour a Day Routine

As soon as the cabin's steel door was dogged down, technicians began lowering the air pressure inside it to 8 lbs.—just over half an atmosphere, normal for 18,000 ft. At the same time they kept Farrell's oxygen supply normal by raising the oxygen content of the air fed to him through air-conditioning leads until it was double the sea-level proportion. And Farrell was off.



To test man's adaptability to a routine with no day-night cycle, the space medics had put Farrell on an arbitrary 14-hour day: 4½ hours for sleep, two work periods of four hours each, three half-hours for meals and personal hygiene. For work, he had to solve problems fed to him through a double-screen radarscope. Similar but not identical tracking patterns appeared on the two screens. By twiddling dials, Farrell had to make the right-hand screen match the left. Flanking him was a whopping panel with 30 lights, each labeled with a command. When the light flashed indicating "check oxygen equipment," Farrell did so and got his mask on in 19½ seconds.

Music on Request

Farrell had already experienced weightlessness in ten parabolic curve maneuvers in a supersonic F-94-C. He was selected for the space-cabin test because he seemed to have just the right steady temperament. At first, in his cell, he was tense, but soon settled into the routine. He could not see out. Day after day he heard no human voice; the only sound available was recorded music which he could request (his preference: musical comedy, especially Gershwin and Cole Porter).

Farrell could talk to the outside. Every now and then he pressed a microphone button, and began: "Space cabin to ground. I am now transmitting." His reports of the temperature in the cabin and how he felt were tape recorded. Everything he did and said was timed. Continuous recordings of his pulse and breathing could be matched against the kinescope showing his activities and other recordings of temperature, humidity, etc.

---

[1] Courtesy of *Time;* copyright Time, Inc., 1958.

Farrell (făr'ĕl):	A family name.
copious (kō'pĭ ŭs):	Plentiful.
improvise (ĭm'prô vīz):	To make without previous preparation.
prefabricate (prē făb'rĭ kāt):	To make at the factory before delivery.

Plenty of Food

Normally, six-footer Farrell maintains his 185 lbs. on 2,500 calories a day. But the Air Force had stocked his tiny cabin with a rich larder: prefabricated meals of lobster, ham and chicken, with pickles and olives for garnish. He had an electric heating cup to prepare instant coffee or tea. Farrell became a chow hound, worked up to 3,400 calories a day with snacks.

Personal Hygiene Adequately Provided For

Farrell had plenty of bottled water. He used it for drinking, for brushing his teeth, and for daily sponge baths. Daily he changed into a fresh hospital suit. Air conditioning removed the moisture that came from his sweat and drew off his body heat; activated charcoal helped with the deodorizing. He slept on an air mattress stretched over a litter. Though crew-cut, Farrell was annoyed to find that he had forgotten to take a comb with him. He improvised one by taping toothpicks on a piece of cardboard, contentedly ran this through his stubble. He used an electric shaver. He kept track of time with a hand-wound travel clock and a calendar on which he crossed off the dates, also kept a copious diary.

Tires Toward End of Week

Toward the end of his fifth day in solitary, Farrell tired noticeably. He was hard to wake (with an electric alarm operated from outside) from his sound if cramped sleep. Then he muffed a couple of radarscope problems. But he soon snapped out of it, completed his seven-day stint—long enough to get to the moon and back at present attainable speeds—with no outward sign of emotional or physical ill effects. Only once did he show irritation, when he was fed some loud hillbilly music. He quickly switched it off.

Ready for Moon Trip

At the end of the week Airman Farrell wriggled out of his space cabin, a bit stooped and wobbly from being cramped, but otherwise none the worse. He repeated what he had said before "take-off": "I would really and truly like to make that first trip to the moon. I'm available if they want me." The Air Force medics kept him under observation and set about the job of analyzing the miles of records accumulated while Moon Traveler Farrell stayed anchored to the ground.

Ending time: Hr._____Min._____Sec._____

Preview Test

Check the correct answer.

1. This selection gives information about (a) a real trip taken into space (b) the trying out of a spaceship (c) a test of one man's ability to withstand spaceship conditions (d) an airman rehearsing the duties of operating a spaceship.
2. This selection is (a) science fiction (b) fantasy (c) a myth (d) accurate factual information.
3. The sealed cabin in which Mr. Farrell took the test was (a) large enough so that he could walk around (b) high enough so that he could stand (c) large enough so that he could sit or lie down only (d) so constructed that he had to lie down all the time.
4. Your preview gave you definite information to the effect that two types of equipment were in the cabin. What were these? (a) pressure suit and visors (b) transistors and relays (c) fuselages and speed instruments (d) cameras and electrodes.
5. Did Farrell have any routine? If so, how often and how long was it? (a) he had no routine, whatsoever (b) he had a daily routine of 14 hours (c) some days he had a routine, and some days not (d) he had a daily routine of 8 hours.
6. What provision was made for recreation? (a) magazines and books (b) games to play (c) moving pictures (d) music upon request.
7. In regard to food, Farrell was (a) put on a strict diet (b) given just a certain number of calories each day (c) provided with plenty of food (d) given no food during the test.
8. Farrell's personal hygiene (a) had to be neglected entirely (b) was adequately provided for (c) was partially taken care of (d) enabled him to shave only.
9. Farrell (a) withstood the ordeal with no fatigue (b) showed fatigue the first day (c) showed fatigue continuously (d) tired toward the end of the week.
10. At the end of the test, Farrell's attitude toward taking a moon trip was as follows: (a) he didn't want any more space travel (b) he was willing to go up to a high altitude in a jet plane (c) he was afraid to go to the moon (d) he was ready to go to the moon.

Reading Test

Check the right answer.

1. The Air Force's space medicine men wanted to study Farrell's reactions to (a) weightlessness (b) cosmic rays (c) acceleration (d) confinement and fatigue.
2. Electrodes strapped to Farrell's arm and chest enabled Air Force doctors to keep watch on his (a) food consumption (b) reaction to problems (c) pulse and breathing (d) temperature.
3. Farrell's oxygen supply was (a) reduced by one half (b) doubled (c) trebled (d) kept normal for sea level.
4. His fourteen-hour day was (a) divided evenly between work and recreation (b) given mostly to sleep (c) devoted principally to meals and personal hygiene (d) devoted more to work than any other one thing.
5. Farrell (a) had a radio (b) had a television set (c) could request music (d) could turn on music, himself, whenever he liked.

6. He ate (a) about the same number of calories per day as usual (b) many more calories than usual (c) not as many calories as usual (d) twice as many calories as usual.

7. At first, one thing was lacking in his personal hygiene equipment: (a) towel (b) electric shaver (c) water for bathing (d) comb.

8. It was evident that he was tired on the fifth day because (a) he said so (b) he slept during the time he usually took care of personal hygiene (c) he was hard to wake up and failed in working out a couple of problems (d) he didn't bother to eat.

9. He showed irritation once when they (a) gave him a difficult problem to solve (b) gave him loud hillbilly music (c) woke him up suddenly (d) flashed bright lights in his face.

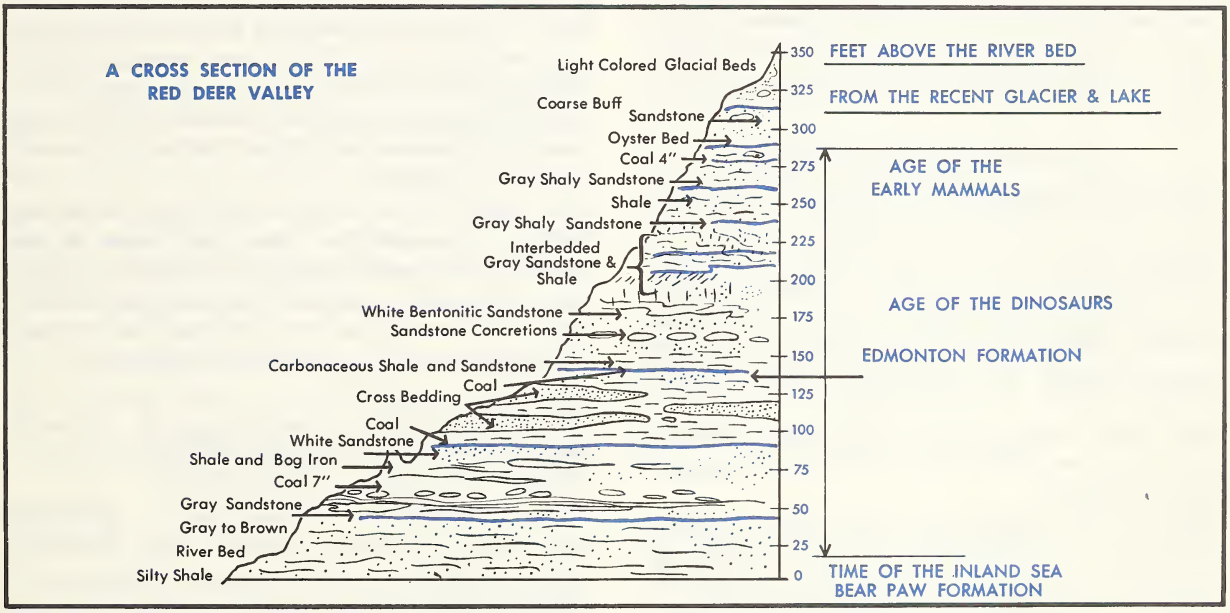
10. When Farrell came out of his space cabin he said, (a) "That was a dreadful ordeal" (b) "I'm very tired" (c) "Did you find out what you wanted to know?" (d) "I would really and truly like to make that first trip to the moon."

	Hr.	Min.	Sec.
Ending time:	_____	_____	_____
Beginning time:	_____	_____	_____
Total reading time:		_____	_____

No. words 980 / No. seconds × 60 = _____WPM

Comprehension score: _____ WPM: _____

PREVIEWING AGAIN



You have heard about the prehistoric animals that once roamed the world many millions of years ago. Perhaps you have read how the bones of many of these huge animals have been discovered in Canada.

You may be surprised to learn that a huge sea once covered the central provinces of Canada. The bones of many weird animals which lived on the shores of this sea have been dug up in Alberta. The selection on page 20 gives you interesting information about these strange beasts of long ago.

Selection 2

Try your preview techniques in reading this article:

1. Read the title.

2. Read the two paragraphs in italics at the left beneath the diagram.

3. Study the diagram. Note the comparative length of time of the dinosaur period.

4. Read the notes which indicate how this rock was laid down.

5. Read the subheadings in italic type.

6. Take the preview test on page 21 to find out how much information you gathered just from previewing.

7. Read the entire selection under timed conditions. Then take the comprehension test to find how well you understood the selection.

The Dinosaur Dynasty

Beginning time: Hr. ______Min.______Sec.______

A popular type of television program projects the viewer back into history and demands that you imagine "You Were There." Let us project ourselves back in time 130 million years. A shallow Cretaceous Sea extended from the Arctic Ocean to the Gulf of Mexico, and its western shore ran down the middle of what is now Alberta. Before the Rocky Mountains were born, a narrow ridge of deltas and humid swampland hemmed in this sea on the west. Into this sea rivers carried large quantities of sand and clay which spread over the sea floor. Under the tossing palms, along creeks where the water lapped slowly, large, ungainly creatures lumbered for thousands of years.

Sixty million years ago a series of tremendous earth upheavals caused the upthrust of the Rocky Mountains. The Cretaceous period ended. The sea disappeared and the plant-eating animals deprived of water, died. In turn the flesh-eating, or carnivorous dinosaurs, starved to death, and the Dinosaur Dynasty was over.

What Excavations Have Revealed

Fossilized dinosaurs were first found in the Badlands of the Red Deer River in Alberta in 1885. Systematic collection of bones and skeletons was begun in 1912 and since that time, over two hundred skeletons or parts of skeletons have been excavated. These dinosaur skeletons have been found in two major layers of deposits. The upper layer is separated from the lower one by a very wide deposit of shale, rock which splits easily into layers. Thus archaeologists say that there were two different periods when tropical forests flourished.

How do the scientists prove this? The Red Deer River has cut its way through many layers and through this erosion has revealed the mystery of the past to scientists. The shale strata in which numerous fossils of marine animals have been found reveals that a sea once covered the area. The upper bed is 1,224 feet thick, and contains many coal seams, while the lower one varies in thickness from 400 to 800 feet. It is in these two beds that erosion has exposed the fossilized bones of dinosaurs that died and sank to the bottom of the Cretaceous sea, or if they were land animals expired stranded on the sandbars. Dinosaur bones, considerably worn by water action, lie mingled with water rushes, fossilized figs, other tropical fruits, fish scales, and fragments of turtles and shells. The shale layer, however, contains no dinosaur remains, or plant fossils. Thus the scientists conclude that the forest was at one time inundated by a sea, but that over thousands of years the sea dried up, plant life once again flourished, only to disappear again through vast movements of the earth.

This graveyard of the dinosaurs in Alberta is one of the world's richest sites for scientific research. Not only have more dinosaur skeletons been found here than anywhere else in the world, but from the fragments scientists have been able to reconstruct many "missing links" in the history of the development of these pre-historic monsters.

Different Species of Dinosaurs

Dinosaurs, as with many modern animals, are usually divided into two main species, herbivores, or plant-eating, and carnivores, or flesh-eating. From the remains found in Alberta, scientists disproved the theory that the duck-bill and certain other species were confined to land. The evidence from the Alberta Badlands indicates that many species could swim, and that the carnivorous beasts would stalk their prey through the rushes and fronds "as the tiger would crawl on his victim."

Plant-Eating Dinosaurs. Some of the big plant-eating dinosaurs thronged the deltas and shores of the swamps, while others foraged for food on uplands some distance from the sea. There appear to have been five main types of herbivores, three of which inhabited the swamps and two the uplands.

The three main families of swamp dwellers were the "duck-bills", the "armoured", and the "horned." Each of these names illustrates the outstanding characteristic of the group.

The duck-bills were distinguished by their very long beaks which each contain more than 1600 teeth. These animals were from twenty to forty feet long, and walked on their hind legs using their short front ones to hold down branches while they ate leaves. Their feet were webbed at the front but had hoofs at the back, so that archaeologists have concluded that they both swam and walked. Some of these species appear to have had crested heads while others were flat headed.

The armoured dinosaurs were encased in bony plates. They resembled immense turtles. Their bodies were about fifteen feet long, four feet high and five feet across and were supported on short but massive legs. Their most extraordinary feature was their tails. These were bony plates fused together and were swung as war-clubs. These fearsome creatures lived on tubers, soft boneless animals and insects.

The horned dinosaur had the largest head ever carried by any land animal. Not only had it a large

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inundate (ĭn′ ŭn-dāt): to cover with a flood; overflow.
stalk (stôk): to approach stealthily.
agile (ăj′yl): moving quickly and easily.
rudimentary (ro͞o′dĭ men′tȧ rē): in an early stage of development.

beak but three huge horns generally grew over the nose, and over each eye socket. In addition a bony crest extended behind the eye horns to protect the neck and shoulders. One skull measured six feet from the end of the beaked mouth to the end of the crest and besides the usual three horns, this specimen had four extra horns starting out of the forehead.

Both types of upland plant-eating dinosaurs walked or ran on long, powerful hind legs and had hoofed feet. Their distinctive features were, however, their skulls. One had a tiny skull of about eight inches, though the overall length of the animal was twelve feet. The other had a dome head of even smaller size, but its skull was three inches thick, and was probably used like a battering ram when it attacked its enemies.

Flesh-Eating Dinosaurs. Five main families of flesh-eating dinosaurs are represented in the excavations made in Alberta. Most of these carnivorous monsters stalked the plant eaters in the swamps. They tended to be larger than the herbivores and appear to have been more agile.

The largest of the species often measured forty feet with jaws four feet long and six-inch teeth. As they walked on their hind legs they stood twenty feet high. Their bird-like feet, three front toes and a back one having sharp, curving claws indicate they were land animals. Since their front limbs were very small for their size, these could have been of very little use.

The second family of carnivores resembled a modern ostrich, though they had no feathers. They were much more lightly built than any of the other dinosaurs and were therefore probably much more active. Though they had four legs, they apparently only used their hind legs for walking. Their front legs appear to have been rudimentary arms, ending in three long "fingers" which may have reached into cavities for insects, honey or perhaps the eggs of other dinosaurs. The skeletons of this species have been found most often in the lowland deposits indicating that these "birds" inhabited the deltas and plains near the rivers.

Of the other three remaining species of carnivores, little evidence remains. Scattered parts of the skeletons have been discovered. The Red Deer Valley has so far yielded no dinosaur egg, and only one specimen of "tracks"—those of a bird mimic.

Digging for Dinosaurs

The excavation of a dinosaur is a long, painstaking, laborious task. Once a fragment is discovered the earth around it is scraped away by hand-tools. The bones of the exposed skeleton are brushed with shellac to harden them. Strips of burlap and plaster of paris are then used to keep the skeleton together. Sometimes splints of wood are also added. Then the block of rock in which the bones were found is carefully cut away and then turned over. The process is then repeated, and the whole "bandaged" skeleton sent to a museum.

There, the plaster and burlap covering is softened with water and the remnants of rock remaining are carefully chipped away. Each bone is cleared, numbered and finally mounted for display. One of Alberta's oddest items of export are dinosaur "spares."

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

$\frac{\text{No. words} \quad 1350}{\text{No. seconds}} \times 60 =$ ____WPM

Preview Test

Check the correct answer.

1. The subject of the selection is (a) animals in Canada, (b) excavations in Canada, (c) the age of dinosaurs, (d) the age of the Cretaceous sea.

2. Where in our country have the remains of prehistoric animals been found? (a) the Arctic circle, (b) Alberta, (c) the Maritimes, (d) Vancouver Island.

3. The diagram shows that the Edmonton formation stretches from the river bed to a height of (a) 280 feet, (b) 50 feet, (c) 350 feet, (d) 275 feet.

4. In what types of the rock formation are most of the dinosaur remains found? (a) sand, (b) bog iron, (c) clay, (d) shale.

5. What type of land formed the basis of the coal layers? (a) dense swamps, (b) rocky plains, (c) sandy shore, (d) volcanic.

6. When were dinosaur remains first found in Alberta? (a) 1912, (b) 1865, (c) 1910, (d) 1885.

7. The name of the river which has cut through the land, exposing the remains is (a) the Red, (b) the Assiniboine, (c) the North Saskatchewan, (d) the Red Deer.

8. How many species of dinosaurs are there? (a) five, (b) two, (c) four, (d) seven.

9. The Red Deer Valley has yielded many dinosaur eggs. Is this statement (a) true or (b) false?

10. Alberta exports dinosaur "spares." Is this statement (a) true or (b) false?

Comprehension Test

Write your answers on a piece of paper.

(1) Define the following terms: (a) herbivore, (b) carnivore.

(2) Give *three* ways in which scientists prove that tropical forests once flourished.

(3) Name the three main dinosaur families which dwelt in the swamps. Give three outstanding characteristics which distinguished each of these.

(4) List the main steps in the excavation of dinosaurs.

(5) From the facts given in this article, suggest two reasons why the dinosaurs disappeared.

CHAPTER 4

HEEDING DIRECTION WORDS

There are signposts on the highways that tell us when to go straight ahead and when to turn left or right in order to reach a certain town. There are signposts in reading material also that tell us what direction to take as we travel over a page of print. If we are aware of these signposts and note them as we go along, we reach the end of our reading journey more rapidly and with better understanding.

There are certain words that signal us to keep right on going in the same direction. These words tell us that the thought stream is flowing straight ahead without bends or turns. Other words warn us that there is to be a change in the flow of thought and that we had better be ready to make a sharp turn.

GO AHEAD SIGNALS

Some of the words that tell us to proceed straight ahead with all speed are: *and*, *more*, *moreover*, *more than that*, *furthermore*, *also*, *likewise*. When we note one of these words or phrases we may know that there will be more ideas ahead that carry forward the same course of thought.

And is the most common of all of the "go-ahead" words. It connects ideas of equal importance or ideas that come in a certain order.

The paragraph below tells about the Queen Charlotte Islands. Notice how *and* signals you to keep on going, that there will be more of the same thing ahead:

> These islands are in British Columbia and have two main islands, Graham and Moresby, and many smaller ones. Here there is logging of spruce and cedar, and valuable off-shore fishing. The population of about 2500 is one-third Indian and is centered on the coast and mainly on Graham Island.

Each of the two *ands* in each of the three sentences connects ideas of equal importance and the whole thing moves forward rapidly with no turns in the flow of thought.

The words and phrases *more*, *moreover*, *more than that*, *furthermore*—all tell that there is something more to be added on the same subject and that the thought will be carried forward in the same direction.

Also literally signifies "all in the same manner." *Likewise* means "in like manner." Both of these words are used to join ideas which have a sameness in the whole, and therefore they tell us to keep on "traveling"—that there will be a continuance in the same thought direction.

ACTIVITY 1

Underline the direction words or phrases in the paragraphs below which signal you to proceed straight ahead. As you come to each one, stop and think about its function in the sentence. Ask yourself, "Does this word *really* warn me that the discussion is going to run along in the same tenor—that there will be no change in the course of thought?"

1. Universities everywhere are constantly being called upon to sponsor conferences and seminars and forums of groups from off-campus, and do their often-limited best to comply. In being devoted specifically and exclusively to that function, Arden House is a pioneering experiment.

2. I believe that federal fellowships, scholarships, inducements to accelerate the training of the most talented students, financial aid for fundamental research at the graduate level, and perhaps other federal helps are justified, on a temporary basis. More and more we also need an expanded program of high-quality graduate research and instruction, including better teacher preparation.

3. The first question to emerge in the minds of most Western observers as they watch the unfolding of a Soviet election is "Why?" There is no contest in any of these votes. Moreover, once these unopposed candidates are elected they have very little to do. For the great majority, their semi-annual week in Moscow is the major expression of their public activities.

4. Once again, they reported, the mistaking of man for game came third among all causes of non-self-inflicted wounds. More than that, they painted a picture of the type of man who usually commits this most inexcusable of all hunting accidents—and it wasn't pretty.

5. Once, long ago, there lived a simple Arab goatherd. One day, his goats began frolicking and kicking up their heels. Furthermore, they actually danced, whirling around and around and taking fancy steps. The goatherd traced these strange actions to a red berry which the goats had eaten and which later came to be called coffee.

6. "The trouble with the books I had manufactured

was that I had been buying paper that had been made by men who knew or cared nothing about the books I had been making. Likewise, the type I had been using had been made in a foundry by men uninterested in my work. I wanted to create everything that went into a book, myself."

Timed Reading Making Use of "Go-Ahead" Signals

Selection 1

Read the story below, noting how the "go-ahead" direction words help you to read rapidly. They convey to you that there will be no changes in thought, that you can proceed full speed ahead.

Jot down your beginning and ending times as usual.

Peter, the Mocker [1]

Beginning time: Hr._____Min._____Sec._____

This is the story of a little wild "mocker" that came to us in a most remarkable way and remained for years a devoted member of our household.

We lived in a southern village. Large oaks and pines grew in the yard of our house, and many flowering shrubs. Year after year birds built in the thickets. One day old Shep, our yard dog, came down the path with something in his mouth. He had picked up a wounded mocking bird. He laid it down at our feet with a look that said, "Dogs can be Good Samaritans too."

I fixed a nest for the wee bird in a basket suspended from the ceiling of the porch, so that no marauding animal could harm "Peter"—as we called him. Our delight may be imagined when we found that Peter intended to adopt the hanging basket as his permanent home.

One day Peter flew to the screen door of the dining-room, fluttered against the wire and made a noise that indicated that he wanted to get in and become more intimate with the family. He came in at my invitation and settled contentedly on a picture of St. Cecilia which hung over the mantel. This picture proved to be his favorite perch, and there he spent many pleasant hours trilling his melodious songs as gayly as though he were in the depths of the forest. Often he would fly down to sit on our fingers, eat from our hands and lips, and nestle on our shoulders.

Peter lived with us four and a half years. One of many endearing things he did was to accompany us when we went away from home to spend the night. As we traveled along the road our feathered friend would fly through the tree tops. Moreover, at night he would roost outside our lodging place, and in the morning, when we came out, he would call as loudly as he could, "Peter! Peter! Peter!" to let us know that he was waiting for the return home.

On one occasion he brought to our door a female mocking bird which had lost one of her legs. Trustingly she came with Peter to his human friends for aid. She shared his perch on St. Cecilia for several months, and many a joyous duet they sang to our delighted ears. The sweetness and clearness of their notes was remarkable and, unlike human vocalists, they were never "off key." We found afterwards that the female had been caged and tamed by a fellow townsman, and so she was returned to her owner.

At last there came a day when we had to say good-by to Peter too. We had to move to a new location. The picture of St. Cecilia was left hanging in its accustomed place on the wall. Peter evidently was disturbed by the change and could not understand where we had gone. According to the new tenants, he would go off and stay for a week or two, then reappear. These journeys became more and more frequent, and Peter remained away longer each time, until at last he left for good. We always liked to think that he had gone in search of us and that somewhere he had found another happy home.

Samaritan (sȧ măr′ĭ tăn): One generous in helping fellow beings.
melodious (mē̇ lō′dĭ ŭs): Having a melody.

	Hr.	*Min.*	*Sec.*
Ending time:	_____	_____	_____
Beginning time:	_____	_____	_____
Total reading time:		_____	_____

No. words $\frac{550}{}$ × 60 = _____WPM
No. seconds

Comprehension Check

Now find out how well you understood what you read. Check the correct answer following each statement or question.

1. When Peter was wounded (a) he was found by the writer of the story in a thicket of flowering shrubs (b) he came to the screen door and begged to come in (c) another bird brought him to the home of the person writing the story (d) a dog brought him in.

2. Peter made his home (a) in a pine tree (b) on a picture in the house (c) in a hanging basket on the porch (d) in a flowering shrub.

3. Peter's favorite perch was (a) the screen door (b) a picture of woods (c) a shelf (d) a picture of St. Cecilia.

4. In Peter's relationship to the people with whom he

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[1] Butler, Mary S., "Peter, the Mocker," *The Mentor*, Vol. 14, No. 7 (August 1926), p. 49.

lived (a) he was always shy (b) occasionally he would let the people with whom he lived catch him (c) he flew away when they came near (d) he would fly down to sit on their fingers and eat from their hands.

5. When the family went away from home to spend the night Peter would (a) continue to perch on his picture (b) ride with the family in their car (c) fly along with them (d) fly mournfully about the house until they returned.

6. Peter lived with the family (a) two and a half years (b) four and a half years (c) five years (d) one and a half years.

7. On one occasion Peter brought another bird to the house. This was (a) a sick pigeon (b) a mocking bird that had lost a leg (c) a mocking bird with a broken wing (d) a crow with a broken leg.

8. The two birds (a) never sang together (b) were off-key when they tried to sing together (c) made a joyous duet when they sang (d) never mocked other birds.

9. It was found out later that the bird Peter brought in (a) had escaped from the zoo (b) had been the pet of a little girl (c) had been Peter's mate before he was hurt (d) had been caged and tamed by a fellow townsman.

10. After the family had moved, Peter (a) stayed on in the house until he died (b) left for good (c) went away for a week or two but always came back (d) continued to come and go until his death.

Comprehension score: ____ WPM: ____

SHARP-TURN SIGNALS

You have had some practice in making use of frequently used "go-ahead" words. Now you will have an opportunity to note the usefulness of "turn-about" words in helping you with your reading.

The most common of the words which warn you that there is to be a change in thought is *but*. If all readers would heed even the warning this one little word *but* signals to them, they would pursue reading content with greater ease and better understanding.

Notice how the word *but* completely reverses the thought in the paragraph below:

> An angry alligator hisses and attacks with a short, fast lunge, its mouth wide open. But really it is a cowardly animal. At the slightest sound it drops into water and disappears. Or it runs, covering a hundred yards much faster than a man can.

When you started to read this paragraph you might have thought that the entire paragraph would deal with the fierceness of the alligator. But the little word *but* changed all of this. After the first sentence you get a picture of the alligator which is just the opposite of the picture described before the word *but* was introduced.

Some of the other common words which sharply change the flow of thought are: *yet*, *nevertheless*, *otherwise*, *although*, *despite*, *in spite of*, *not*, *or*, *nor*, *on the contrary*, *however*, *notwithstanding*.

When you come upon such words as these, prepare yourself for an abrupt change. These words tell you that the course of thought is about to change; that the author is about to usher in an idea or ideas that are opposite to those that you have been reading. Don't go jogging along past these signposts on a straight-ahead road. When a signpost says, "Sharp Turn," adjust your thoughts to the change that the author is about to take. Travel with the author, and you'll reach your destination more quickly and more accurately.

Underlining Sharp-Turn Words

ACTIVITY 2

Read the sentences and paragraphs below. Find and underline the "turn about" words and phrases. Note the effect which these words have on the direction in which the thought is flowing.

1. When a book is issued at the author's expense, the world is generally right in its assumption that a new Shakespeare is not being introduced. Yet several authors who eventually had little trouble in finding publishers made their first appearance between covers at their own expense, or at the expense of admiring relatives.

2. On the farm that I knew as a boy, we gathered the choicest pawpaws from upland bushes that grew along the old rail fences. Here we had a deep, red clay loam that grew pawpaw bushes to perfection and ripened fruit with an especially appealing flavor. Despite a pride in keeping fence rows clean of weeds and brush, no one seriously considered cutting the pawpaw sprouts that grew up on both sides of the fence to hold the rails in a vise-like grip.[2]

3. One by one the old bridges go, and with them goes much of the charm of the landscape of the Maritimes. But memories of them will linger in the minds of many: memories of their high pointed roofs between the trees, of their long broad flanks reflected in the water, of the cool darkness inside, broken by shafts of sunlit dust, of the soft noise of feet and subdued clatter of hoofs on the worn, splintered floor.

4. One time when I was sketching in the desert, I found just the view I wanted, and there was a bare patch of ground where I could sit. I was getting well into the drawing when the ants swarmed over me. I was sitting on an ant hill.

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[2] Thomasson, R. R., "Pawpaw, the Custard Tree," *Nature Magazine*, Vol. 51, No. 1 (January 1958), p. 41.

They took a few nips at me. I did not slap at them, and they decided that I was neither edible nor dangerous. However, they were curious. They explored me from toes to scalp; to them I was a new and interesting species. When I was through with the sketch, I got up and shook myself, and they all dropped off. They did not want to go home with me.[3]

5. Animals on a farm feel that they are all members of the family, and they get along together as members of a family should. They are proud to be petted and fed. The petting means as much to them as food. They feel that they are quite superior to the wild things slinking around in the woods, hunted and hated and often hungry. Not for anything would the cats catch the little chickens, nor would a horse deliberately step on a cat.[4]

6. The college girl of the gas-lit era was more apt to have considered and given up the thought of marriage than not. She was, apparently, both cheerful and courageous. The elements of self-reliance and superior ambition which have marked the pioneer throughout history have always had their own particular rewards. Otherwise, the contagion of getting a college education would never have become general with women.[5]

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[3] Dunlop, Ellen L. "From Aunt Nellie's Notebook," *Nature Magazine*, Vol. 51, No. 1 (January 1958), p. 18.

[4] *Ibid.*, p. 19.

[5] McCord, David. "Radcliffe," *Times Magazine*, *New York Times*, December 5, 1954, p. 26.

MAKING USE OF BOTH KINDS OF DIRECTION WORDS

Selection 2

A selection is given below in which there are both "go-ahead" and "turn-about" words. Glance through this selection underlining all of the words of each type which you can catch in one quick glance.

After you have found and underlined several of the direction words, read the selection under timing. Let the "go-ahead" words signal you to continue on with full speed. Let the "turn-about" words warn you of a change in thought so you'll be ready to meet that change and follow it without loss of speed. See how fast you can read with the use of direction words.

Sachet [6]

Beginning time: Hr.______Min.______Sec.______

This is a story—a true one—of the busy little animal that nobody wants to know.

One day, just as an automobile was going by our camp, there was a light thud on the porch floor. Someone had thrown a soft object from the car, and it lay there, a little ball of black and white fur about the size of a man's fist. At first we thought that the small creature was dead, but after it had lain in our hands for a few minutes a faint beating of the heart showed that life was still existing.

A large group of boys had crowded about. The questions were coming thick and fast:

"What is it?"

"It's a baby skunk, a wood pussy."

The boys quickly vanished, and we were left with our little foundling.

In the seclusion of our small camp room we made our plans as to what was to be done. A cup of milk was secured from the cook, and we tried to feed the black and white baby from a small spoon. But it was not to be fed. Without opening its eyes it would turn its head away. A fountain pen filler was secured, the ink cleaned out, and the instrument of forcible feeding made ready for use. However, the little animal persisted in its hunger strike. Then the cook suddenly had an idea. "Get a piece of string," he suggested. The string was soaked in the milk and then offered to the baby, who almost without hesitation started to suck the warm milk, and continued to suck until its thin little stomach was stretched to fullness.

For the next two weeks the wood pussy was fed three or more times a day on sterilized milk from a piece of string. He was kept for a time indoors. Although he was timid at first, he finally became as tame as a house cat and did not object to being handled. Sometimes at night, when I was writing, he would play about on the desk—hiding behind a pile of books, then, cat fashion, slowly showing his head around the corner and making a dash to knock the pencil or pen from my hand.

When the problem of a name arose, someone suggested "Sachet"; and from that day our pet wood pussy was known as "Sachet."

Outside, just back of the main cabin, we built a cage for Sachet, and inside it we made a fine little soap-box bungalow. Sachet inspected the dwelling from the outside, very cautiously entered, and walked about with nose in the air. Despite this very fine house he proceeded to dig a hole underneath the

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[6] Carr, William H., "Sachet," *The Mentor*, Vol. 14, No. 7 (August 1926), pp. 55–56.

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sachet (să shā′): A perfumed bag or pad.
chrysanthemum (krĭs ăn′thē mŭm): A large plant of the aster family.

house. He preferred to live *under* rather than *in* his new abode.

There were a number of boys in the camp who wanted to see what a skunk's tracks looked like, so we made a good-sized mud puddle and induced Sachet to walk through it, leaving his footprints as he went. The end of the mud puddle had just about been reached when around the corner of the cabin came bouncing a small dog, who saw the skunk at once and ran up toward it barking.

The boys scattered and looked on from a safe distance. Never before had we seen Sachet in all his glory. He faced the dog with his head held high and his beautiful, glistening tail arched over his back like a chrysanthemum made of fur. The dog stopped short. He had never come across a creature like this, but before he could learn more his master rescued him, and the affair was safely over.

When camp broke, the other boys went home with various pets. Nevertheless, Sachet remained with us. He grew larger and larger until he was the size of a big cat.

Up in Massachusetts that year there was a big interstate fair held in the city of Springfield, and we took Sachet there and exhibited him. He was "cartooned" and photographed and became quite famous in that town. Furthermore, so many people came to see him that there were times when it was necessary to block off the entrance to our little hall until the crowd already inside had been dispersed.

From Springfield we went on to Brockton, Massachusetts, where there was also a fair, much more exciting in various ways. Likewise, there again Sachet was the center of attraction. Our tent was full all the time. People wanted to know all about him, wanted to pet and hold him and, above all, to feed him. Surely this was one skunk that was not in disgrace.

There are probably not many skunks that have gazed at the two governors of two states. During the summer Sachet had seen, and in return had been examined by, the governor of New York State; and during the last day of the Brockton fair he looked unperturbed at the governor of Massachusetts. All people were alike to him—he was the most independent little creature that lived. Even when fishing for apples in someone's coat pocket he never hurried. And later, when he acquired the bad habit of chewing things he had no right to chew, such as dogs and human fingers, he never hurried and never showed any particular interest in what he was doing—although the object being chewed often did.

After a strenuous week the fair was over and the journey home seemed to be the next thing. But there was a man on the fair grounds with a large dog with which he used to hunt and kill bears. This man made real Indian bows, and arrows with hand-chipped stone heads as well. When the fair was over, he invited us to come with him to his home up in the center of Maine.

So Sachet went with us to Maine and had a wonderful trip. Strange as it may seem, he and the man's big dog got along together very well.

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

$\frac{\text{No. words} \quad 1000}{\text{No. seconds}} \times 60 = ____$WPM

Comprehension Check

Check the right answer.

1. This is the way in which the writer happened to get the skunk: (a) he found it under his cabin (b) he caught it in the woods (c) a man gave it to him (d) someone threw it on his porch.

2. The baby skunk took his first milk from (a) a spoon (b) a bottle (c) a string (d) a fountain pen filler.

3. While the writer was at his desk, the skunk would (a) spill his ink (b) crumple his paper (c) sit on a pile of books (d) knock the pen or pencil from his hands.

4. Sachet lived (a) in his cage (b) in a hole under the house (c) in a bungalow (d) in the cabin.

5. When the dog came running up to Sachet (a) the skunk stood his ground (b) the skunk ran (c) the dog ran (d) a fight ensued.

6. Sachet was photographed in the city of (a) Boston (b) Brockton (c) Springfield (d) Camp Grant.

7. At Brockton, people (a) were afraid of Sachet (b) were not interested in him (c) asked to have him removed (d) wanted to feed him.

8. Sachet gazed on the governors of (a) New York and Massachusetts (b) New Jersey and Pennsylvania (c) Delaware and Maryland (d) Vermont and New Hampshire.

9. Sachet finally acquired this bad habit: (a) running away (b) stealing apples from the writer's pocket (c) fighting other animals (d) chewing things.

10. Sachet finally went with the writer to (a) Massachusetts (b) New York (c) Vermont (d) Maine.

Comprehension score: ____ WPM: ____

Summary

Now you have learned another secret about good reading. Watch out for the direction words in all of your reading. The "go-ahead" words will help you to read faster. The "turn-about" words will save you much rereading.

CHAPTER 5

FINDING MAIN IDEAS

No one reading skill can be of more value to you in studying your high school textbooks than that of quickly grasping the main idea in a paragraph. No doubt you have already developed some ability in using this skill, but practically everyone can develop this ability to higher levels of efficiency.

One of the things for which Theodore Roosevelt was famous was his ability to glance through an article for just a few seconds and then tell the gist of it. No doubt Mr. Roosevelt had learned by himself to "spot" main ideas and to do so with great rapidity.

You, too, can develop unusual skill in locating and grasping main ideas with ever-increasing speed. For the purpose of helping you to further your development in using this particular skill, special instructions and practice material are provided for you on this page and the seven pages that follow.

FINDING MAIN IDEAS AT THE BEGINNING OF PARAGRAPHS

The main idea of a paragraph most often falls at the beginning of the paragraph, as indicated below.

> It was a herd of gazelles that pointed out the lion for us. Every one of them was standing frozen, staring in the same direction. "That means lion," Syd Downey, our "white hunter," announced, and turned our safari car cross-country in the direction the gazelles were staring.

In the paragraph above, the gist of the thought expressed in the entire paragraph is that "It was a herd of gazelles that pointed out the lion for us." The other sentences in the paragraph simply tell more about this main idea and are incidental to it.

Underlining Main Ideas in Paragraphs

ACTIVITY 1

Underline the main idea in each of the paragraphs below.

1. While the condors bear a superficial resemblance to the eagles and the Old World vultures, they are not considered as being closely related to these birds. In flight no living land bird can equal the great American condors. With a wing spread of nine feet and more they far excel even the largest eagles in soaring ability. Like the vultures, they have no grasping power in the feet, and seldom kill for food, though the Andean species sometimes does so.

2. The harsh climate in which he lives forces the Eskimo to spend much of his time at home. Naturally cheerful and industrious the Canadian Eskimo people have developed over the centuries a unique art form, a type of stone sculpture, the product of many long days spent indoors. Few materials are available. Since trees do not grow so far north, there is no wood but driftwood, no textiles, no vegetable dyes, and consequently they have depicted human beings, real and imagined animals in the grey soap-stone of their land.

Study the paragraphs. Make sure that the sentence you underlined in each paragraph gives the gist of the entire paragraph.

ACTIVITY 2

Now underline the main idea in each paragraph in this short selection.

No one knows when the coyote, or wild dog of the desert, first appeared, but his life line lies between that of the wolf and the fox. The fox is red-gold, small, delicate, keen, tricky, and elusive. The wolf is bristling gray, large, rangy, bold, shrewd, and savage. Midway between them the coyote is golden-tawny, medium-sized, pointed-eared and nosed, with clear, deep yellow eyes—a trim, slim, slinking shadow.

No collie could be keener of wit than the high-strung coyote. He uses his wit to get his food and to escape his enemies. But the coyote is unreliable in temper, and when put to the slightest test his nerves fly to pieces. Then beware of his fangs.

As a pup—so he is called when young—he lives the life of a real wild dog. With a litter the size of a collie's, he is born in a cave among the rocks or in a hole in the ground. In this vicinity the mother and father hunt and kill rabbits, squirrels, and other small creatures and bring them into the den. Then ensues the age-old scuffle and snarling as the little dogs tug and tear at their prey.

It would be a worthwhile experiment to counteract the palpitating fear of the hunted wild coyote with soothing sympathy and save that quick intelligence for a better dog. For generations the coyote has lived a hard and hunted life. In spite of it he has the beauty and brains of a domesticated dog. A few generations of careful human handling would accomplish his domestication.[1]

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[1] "The Wild Dog of the Desert—The Coyote," *The Mentor*, Vol. 15, No. 7 (August 1927), p. 28.

Write "Yes" or "No" before each statement below to show how accurately you gathered information from the main idea in each paragraph.

_______ 1. The collie has a keener wit than the coyote.

_______ 2. The coyote might make a better dog.

_______ 3. We have definite information as to when the coyote first appeared.

_______ 4. As a pup the coyote lives the life of a real wild dog.

READING A SELECTION FOR MAIN IDEAS

This is a tree. It doesn't look much like one, does it? This tree is one of nature's curiosities and is found only in Africa. You can find out the important facts about this strange tree simply by reading the main ideas in the selection below.

Selection 1

Find and underline the main idea in each paragraph in this selection.

The Queerest Tree [2]

Among the earth's countless marvels there is nothing stranger than the *Welwitschia mirabilis,* nature's queerest tree. Although it is a tree, according to scientific classification, no one but a botanist would recognize it as such. It more resembles an overgrown mushroom; yet it belongs to one of the big tree families, that of the joint firs.

The queerest tree lives to be one hundred years old, attains a diameter of six feet, is never more than a foot high! The reason for this curious habit of growth is found in the adverse conditions under which it lives in tropical Africa.

Dr. Frederick Welwitsche, a German botanist, discovered the tree. While director of the Portuguese Botanical Gardens, he was commissioned to study plant life in Africa. He spent eight years there, from 1853 to 1861. In Damaraland he stumbled across the queerest tree, which he at first took to be a huge fungous growth. His description of the *Welwitschia* caused a sensation among European botanists.

Two leaves are the only ones borne by the plant throughout its century of existence. When the seedling of the queerest tree first pokes its head above the soil, it puts forth two seed leaves or cotyledons. As the young plant develops, two green leaves spring from the edges of the cotyledons. Flat and leathery, six feet long and two or three feet wide when fully developed, they hang from either side of the stubby trunk in gracefully curving green streamers. In later years they split along straight lines into a number of narrow strips. The illustration shows a young plant in the London Botanical Garden, said to be the only one in Europe. It is from fifteen to twenty years old.

The *Welwitschia mirabilis* is the only species of its kind. It belongs to the great evergreen family. When old enough to bear fruit, double-branched flower stalks, nearly a foot high, spring from the edges of the seed leaves, bearing small erect cones colored a brilliant scarlet. Between the scales of the cones are very small flowers which in due time bear seeds. The ripe cone is oblong and about the size of that borne by spruce trees.

The greater part of the tree's trunk is below ground. It is about two feet long when full grown. A stout taproot, which branches at the bottom, extends downward into the earth, giving the plant a tremendous hold. The wood of the trunk is extremely tough; it is practically impossible to cut or saw it. It can be split along the grain if great force is exerted.

The top of the trunk is formed by the two central cotyledons. When fully grown, it is often fourteen feet in circumference. The surface is rough and rugged, being, according to the distinguished English botanist Dr. Hooker, "dark brown, hard, and cracked over the whole surface, much like the burnt crust of a loaf of bread."

Damaraland, where the tree grows, is in central Southwest Africa and is inhabited by two tribes — the Hill Damara and the Cattle Damara. Although they share the same name, they are of different origin and speak different languages. The Hill Damara are Negroes with much Hottentot blood in their veins, while the Cattle Damara, who live on the plains and

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[2] Tevis, May, "The Queerest Tree," *The Mentor,* Vol. 10, No. 4 (May 1922), p. 33.

Damaraland (dȧ mär′ȧ lănd′): A province in central Africa.
cotyledon (kŏt′ ĭ lē′dŭn): First leaf developed by embryo seed plants.

raise cattle, are a Bantu-Negro people. Damara is a Hottentot word meaning "two Dama women." The Damara call themselves Ovaherero, "the Merry People."

Comprehension Check

Write the main ideas on the lines below.

1. ______________________________
____

2. ______________________________
____

3. ______________________________
____

4. ______________________________
____

5. ______________________________
____

6. ______________________________
____

7. ______________________________
____

8. ______________________________
____

Now read the selection all the way through carefully. Then read your list of main ideas to see if they give you all the *important* facts about the queerest tree.

FINDING MAIN IDEAS IN DIFFERENT PLACES IN DIFFERENT PARAGRAPHS

The main idea may appear *anywhere* in a paragraph. It can appear in the second sentence, in the middle of a paragraph, at the end of the paragraph, or any place else. Do not be fooled by always looking for the main idea in the first sentence. Read into the paragraph until you're *sure* you have found the sentence which is the "kernel" of the thought.

Read the paragraph below. See if you agree that the main idea is in the underlined sentence.

> While much stress was laid upon bird hunting during our expedition, we didn't devote all of our time to birds. In addition to bird hunting, collections were made of Kent Island's flora and fauna, a base line was laid out by the surveyors, and the meteorologist was busy. These preliminary surveys led us to believe that a great deal of nature lore might well await the naturalist on this fascinating island.

Do you think the second sentence gives the most important information in the paragraph?

ACTIVITY 3

Read the paragraphs below and underline the main idea wherever you find it.

1. I stopped for a moment the other day at the comic book rack in our local drugstore. I was somewhat dismayed to find that most of the books on display portrayed scenes of violence on their covers. One, for instance, showed a city being leveled by a hideous monster. Another carried a picture of a gang war. Of the fifty-odd titles on display only five hinted at humor, the rest being devoted to warfare, monsters, and other grim themes. Apparently, "comic" books have given up the idea of being funny.

2. Where can you go if you wish to begin a collection of rocks? A good place is where rocks have been freshly dug up or broken up, or where they have been uncovered by running water. The building of a new road or street, the digging of stone in a quarry, or the construction of a basement for a building may open up sources of interesting rocks. Other places might include a river or creek bank or a hillside where the soil has been washed away.

3. Many years ago people believed that green plants obtain all of their food from the soil. They thought that the plants draw the food up through their roots. This seemed to be true because most green plants are not able to move about in search of food as animals do. Even today many people still believe that green plants secure all of their foot from the soil. However, about 300 years ago a Belgian scientist, Jan van Helmont, performed an experiment with green plants. His experiment proved that green plants manufacture most of their own food.[3]

4. How old do you have to be before you are considered an adult? Actually, being grown up does not depend upon your age at all but upon your emotional maturity. You may be an adult intellectually. You may be an adult physically. And at the same time you may be a child emotionally. Many young people today are not adults for this very reason.

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[3] Ames, Maurice U., Arthur O. Baker, and Joseph F. Leahy, *Science for Your Needs,* Prentice-Hall, Englewood Cliffs, New Jersey, 1956, p. 52.

5. Many scientists say that two things are wrong with high school physics. The concepts of physics are out of date and textbooks are overloaded with practical applications. These critics think that teachers should develop modern concepts of physics. They also believe that textbook writers shouldn't try to make practical applications of everything in physics.

6. How can you learn to spell better? Memorizing the spelling of a list of words is not always effective. Spelling a word in a list as a spelling exercise isn't the same as writing the word correctly in a sentence when you need it. Making use of rules in spelling is often helpful, but unfortunately in our language rules do not always apply. There are many exceptions to rules. Another way to cultivate your spelling ability is to observe carefully the spelling of words in your reading. Another thing that you can do is to put forth persistent efforts to be exact in spelling words whenever you write. Your will to improve your spelling is the most important single factor in learning to spell better.

7. Did you ever notice the strange wings of thin dark skin that the bat wraps around him? These wings are perhaps the most delicate sense organs in the world. They are made up of a network of fine nerves which react in advance to any vibration in the air. Because of this mechanism the bat is able to fly through thick forests on the darkest night following any insect he wishes to catch without so much as striking a single branch on a tree.

8. Many difficult tasks are being made easy in this modern push-button world, but one heretofore simple problem is going counter to the trend. It's getting harder and harder to know what time it is. Some localities now observe daylight saving time all year round, others stay on standard time, while a third group switches on varying dates. To make matters worse, communication is becoming so cheap and simple that people think nothing of calling up friends or relatives on the other side of the world, forgetting, perhaps, that where the phone is ringing it may be two o'clock in the morning.[4]

FINDING MAIN IDEAS IN SELECTIONS

Selection 2

Underline the main idea in this short selection.

On Entertaining the Young

Who says a father can not entertain his young? Nonsense! He has only to shave to provide the whole family with amusement. From the moment he first opens the medicine cabinet until he caps the bottle of lotion and puts it back, he is the center of attention for all eyes, the awe of every open-mouthed little one. As a matter of fact, even mother has to exercise her will power to refrain from joining the audience. The sudsing, the applying of beautiful foamy lather from which only the nose juts out and over which the eyes peer merrily. What a clean swath the sharp blade draws along the jaw line, what contortions Daddy makes creating a smooth path for the razor, how dangerous it looks to stretch the neck and elevate the jaw and shave unflinchingly. Sometimes a little boy is playfully dabbed with lather, or another gets a dash of bitey perfumed lotion. We've seen a little girl awarded a fresh-shaved kiss and she loved it. There's a general sigh when it's over—a great show! [5]

The people in this picture are doing a weird dance. There are no spiders in the dance, but a tarantula caused these people to do the dance. Find out what the tarantula had to do with it.

Selection 3

Glance through the story to find the main ideas wherever they appear. Underline these main ideas. Then read the entire story. Having the main ideas in mind will aid you in getting the meaning of the selection as a whole.

The Dance of the Spiders [6]

One of the strangest sicknesses in medical history had been afflicting the citizens of a small Italian city for hundreds of years up until the 17th century. The peculiar malady was caused by the bite of a spider, and

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[4] "What Time Is It?" Reprinted by permission from *Changing Times*, The Kiplinger Magazine (December 1957 issue). Copyright 1957 by The Kiplinger Washington Editors, Inc., 1729 H. Street, N.W., Washington, D.C. 20006.

[5] Rife, Gladys, "Rural Reflections," *Press-Citizen*, Iowa City, Iowa.

[6] Butler, James C., "The Dance of the Spiders." Reprinted by permission of Esquire, Inc. © 1956 by Esquire, Inc.

Taranto (tä′rän tō̍): A small town in Italy.
tarantula (tȧ răn′tū̮̍ lȧ): A large spider.

the only cure was a frantic dance performed by the whole community. The place was Taranto. This was a hot, rock-bound village near the Gulf of Taranto.

In July and August a strange calm fell over Taranto. The bronzed, usually hard-working residents became impatient, quickly apprehensive. Activity slowed to a halt. Busy streets became quiet and deserted.

Sometimes it happened this way. On one of these hot summer days, a young woman suddenly darted from a house. She wore a brilliantly colored skirt and blouse, long strands of beads, and a great assortment of bracelets and ornaments. Shrieking loudly, she ran toward the village square. Her body twisted and turned, quivering from head to toe. On her thigh was a yellow, swollen spot.

Moments later a man bolted from a nearby house. Screaming, he too danced in a rapid, whirling fashion toward the square. Another followed, then another and another until the square was filled with wildly dancing people. Some were richly dressed, others near nakedness.

Musicians, seeming to appear from nowhere, began an endless melody which they repeated over and over. The dancers started to sing and they danced frantically. Together, musicians and dancers made the weird ritual. This frenzied festivity lasted for four, five or six days—sometimes even as long as two weeks. When exhaustion finally set in, it stopped as suddenly as it had started, and the town fell back into its regular routine until the next year at the same time.

This annual orgy of dancing was supposed to arrest one of the most unique sicknesses of all time. The arrested disease was tarantism, caused by the bite of the tarantula spider.

Physicians said that the perspiration caused by dancing washed away the poison temporarily. But a person was never completely cured. Poison stayed in a victim's body forever. Dancing the tarantella counteracted the effects of the poison which was reactivated each year by the oppressive summer heat.

Near the beginning of the 17th century, physicians started to seek for the cause of tarantism. It existed only in Taranto, yet tarantulas of the same variety were found in other areas. But, strangely enough, people bitten elsewhere did not rise up and dance.

In Naples, a doctor had himself bitten by two tarantulas. The tarantulas were imported from Taranto. Except for the normal swelling the doctor had no harmful effects from the tarantula bites.

The mystery continued until after the turn of the century, when tarantism began dying out. People were still being bitten, but there were no more wild orgies in the market place. Why?

Tarantism was a myth—a disease that never existed. The bite of the tarantula was harmless. But through the years, tarantism developed into a mass neurosis whose victims believed sincerely that dancing the weird dance was the only method of curing the bite of a spider. Thus the cure for a non-existent sickness became a disease in itself.

Comprehension Check

Check the correct answer after each statement.

1. The small town in which this dance occurred was in (a) Africa (b) Greece (c) Italy (d) India.
2. The dance was performed by (a) the people who were bitten only (b) the whole community (c) children only (d) adults only.
3. The calm that preceded the dance usually took place in (a) the autumn (b) the summer (c) the winter (d) the spring.
4. Sometimes the dance started when a spider-bitten (a) man ran into the street (b) woman ran into the street (c) child ran into the street (d) aged person ran into the street.
5. The dance lasted (a) four, five, or six months (b) three months (c) eight, nine, or ten days (d) four days to two weeks.
6. Perspiration caused by the dancing was thought to (a) wash away the poison permanently (b) intensify the poison (c) have no effect on the poison (d) wash away the poison temporarily.
7. Physicians started to seek the cause of tarantism near the beginning of (a) the 19th century (b) the 17th century (c) the 15th century (d) the 12th century.
8. People bitten by tarantulas in places other than Taranto (a) died instantly (b) rose up and danced like the people at Taranto (c) joined the dance at Taranto (d) did not dance.
9. A doctor who had himself bitten by tarantulas (a) became very ill (b) had an illness that recurred each summer (c) had no harmful effects except swelling (d) died eventually of his illness.
10. Tarantism is a disease that (a) was serious at one time (b) never existed (c) especially affected the inhabitants of Taranto (d) is now cured by a drug.

Comprehension score: ____

FINDING IMPORTANT PARTS OF MAIN IDEA SENTENCES

Sometimes the sentence which expresses the main idea of a paragraph is rather long and contains phrases or words that you really do not need to read if all you wish to do is to grasp the one big important point that is made.

As an example, read the paragraph below and note the words that are underlined in the main-idea sentence.

The primitive rock saw used water and sand to do its cutting, erosion style; the blade merely directed

> and sometimes applied pressure to the oldest rock cutting elements. Archeologists estimate that half a century or more was required to saw out a single pyramid rock. In Vermont and elsewhere, oldtime quarry men recall when five years or more was required to "sand-water saw" a 20-ton block of marble. The need was for plenty of time, and an abundance of water and sand on every quarry location.[7]

In the paragraph above the first sentence expresses the main idea. In this case, if you are searching only for the main idea of the paragraph, you are concerned only with getting the "heart" of the main-idea sentence. The basic thought in the main-idea sentence is that "the primitive rock saw used water and sand to do its cutting." So you don't need to bother with all of the details in this long sentence. Just get the basic thought and let the rest go.

Here is another example:

> Struggling for its existence with civilization a very large, white, heron-like bird, the Whooping Crane —one of two species of cranes in Canada—can be sighted each year at points west of the Great Lakes. These cranes are protected by government laws. As the birds are distinctive in size and appearance they cannot be mistaken for any other bird.

In this paragraph the main idea is expressed in three different phrases that are not connected in one statement within the sentence.

ACTIVITY 4

Find the sentence that expresses the main idea in each of the paragraphs below. Underline the part or parts in each of these main-idea sentences that are basic in giving the thought.

1. The new science of wildlife management, which is now included in courses of study in many universities, had its beginning in the waterfowl shortage that threatened the country. Some of the most spectacular discoveries in the cause and prevention of the disappearance of wildlife have been made with the waterfowl. Much has been done to protect waterfowl and replenish streams and lakes with them since the science of wildlife management began.

2. The literature on waterfowl is enormous, and every year sees some new and beautifully illustrated volume devoted to ducks and geese to delight the web-foot nimrods. It seems that everything that can be said about ducks has already been printed and every approach to the subject thoroughly documented.

3. Gardeners who tucked some muscari bulbs in the garden last fall—either under a tree, in the rock garden, or along a woodland path—are probably very glad they did. The blue spikes are happy complements to the bright daffodils which are unfolding their golden cups on yellow saucers.

4. Our urge today is to go and see—anywhere, everywhere, east and west, north and south—to find fresh scenes, strange peoples, and new experiences. Years ago Kipling sang of the wanderlust of spring when the "Red Gods" call us to the wild. Today the wanderlust knows no season. In winter as well as summer we feel the urge. It is reflected in the public press—the travel magazines and the pages of world tour announcements in the newspapers. Modern transportation has made it easy for *anyone* to go *anywhere.* Floating hotels carry us to the Mediterranean, the West Indies, South America, and around the world. All we need is the time and the money—and not so much of that—to sail away, in comfort, to the land of our dreams.[8]

Selection 4

Glance at each paragraph in the article below to find the main idea. Underline the *phrases* or *words* that give the basic thought in the main-idea sentence. In one case, you may find that you need all of the words. In the other cases, you will need to select the most necessary words. After you have underlined the basic idea in each paragraph, read the entire selection to find out more information about each main idea.

Copra, the Golden Hoard of the South Seas[9]

1. "In the South Seas copra is a magic word. For this the Pacific trader dares the malaria and savages of the Solomons and the New Hebrides and the teeth of the coral reefs. The trade store and copra shed stand on the beach of every coral isle. When a steamer or schooner calls, the surf boats go in and out, carrying trade goods and returning with bags of copra." So a traveler sums up the importance of this precious commodity.

2. The coconut palm is the greatest commercial asset of tropical isles and coasts, and copra—the dried kernel of the nut—is by far the most lucrative commercial product of the tree, which yields a number of other useful things and makes life easy for the native.

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[7] Wilson, Charles Morrow, "Rock Is Setting Records," *Science Digest*, Vol. 43, No. 2 (February 1958), p. 5.

[8] "Open Letter," *The Mentor*, Vol. 14, No. 10 (November 1926), p. 43.

[9] Turner, G. S., "Copra, the Golden Hoard of the South Seas," *The Mentor*, Vol. 17, No. 7 (August 1929), p. 9.

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copra (kŏp′rȧ): Dried cocoanut meat.
New Hebrides (hĕb′rů̆ dēz): Islands in the South Pacific.

The saying is, "When a man gets his coconut grove started, he hangs up his hammock." A good deal of copra is dried nowadays in kilns, but the bulk of it is still prepared by the older native process of drying in the sun. The smell of the drying coconut meat is one of the haunting memories of travel. Some declare it to be like the aroma of blooming heather.

3. Fully half the substance of the coconut is fat or oil, and the nut has the quality, unusual among oily vegetables, of keeping for many months without becoming rancid. The copra is shipped to places far and near to be pressed in order to extract the oil. The residue after pressing makes a nutritious fodder.

4. The production of copra is a great deal more than a picturesque local industry of the tropics. It plays a part in the economic affairs of the whole world and has figured conspicuously in international politics. Coconut oil is one of the many vegetable oils that is rapidly replacing animal oils and fats in the diet of civilized man. Just as cottonseed oil has become a common substitute for more expensive lard, so a "margarine" made from coconut oil is now a serious rival of butter. So much, in fact, is now used in making butter substitutes that the better grades are no longer available for their former use in soapmaking.

5. The Germans were the first to discover the vast resources of the Pacific Islands in coconut oil, and for some years before World War I they nearly monopolized the copra trade of that region. The quest for oil has been a fruitful source of conflict and controversy among the powers holding possessions in the South Seas. Today the Philippine Islands lead the world in the production of copra, with Java and Ceylon not far behind.

USING MAIN IDEAS AS AN AID TO RAPID READING

Selection 5

Glance through this selection to locate the main ideas. Try to grasp these main ideas through the use of key words, disregarding the less important ones. Then, timing yourself, read the selection all the way through as fast as you can and still get the meaning.

What Price Orchids?[10]

Beginning time: Hr._____Min._____Sec._____

At one of the orchid shows held in New York, an American grower displayed, under glass in a gold frame, a single plant bearing two flowers. The plant, valued at $10,000, represented forty-two years of persistent, nurturing care.

Visitors to the tropics who expect to find wild orchids growing freely usually meet with disappointment. This aristocrat of the flower family, as though aware of its charms, is tantalizingly elusive, and in its native clime, as elsewhere, is to be had only "at a price."

The loveliest blooms of the wild orchid abide, contrarily enough, in the most inaccessible places, on high cliffs, in the midst of tangled jungles, in poison-breathing, disease-infected, reptile- and insect-ridden swamps.

For the past hundred years professional hunters of the flower, at a reckless disregard of life, have been systematically gathering all obtainable plants. The first scientific orchid research expedition undertaken by scientists started from Liverpool for the interior of South America, under the leadership of Dr. Cecil Garrett, an English horticulturist.

There are over sixteen thousand varieties of the orchid, including some common to almost every country. But the kinds that produce the showy flowers which sell in city shops at from three to fifteen dollars each, and the plants valued by fanciers at from one to ten thousand dollars apiece, furnish the chief lure to hunters and Northern growers alike.

In the jungles the plants generally grow in crotches, or on the limbs of trees. They are not parasites, as they are often miscalled, but epiphytes, drawing their sustenance from the air, not from the tree. In the same trees with the fair beguilers, snakes may lie ready to strike; moss-covered trunks not infrequently harbor hordes of vicious ants.

The usual procedure of the hunters is to cut down the trees to which the plants attach themselves. Occasionally it is possible to reach them by shinnying up poles, but in that event the finder considers himself extra fortunate.

A story illustrating the perils of the orchid quest is told of an Englishman who sought rare and beautiful specimens of the plant deep in the Amazon jungles. Dying of a fever, he pleaded with his native guides to take out with them the prize find of the expedition, so that his death might not be quite in vain. That plant, so dearly paid for, is now one of the most highly esteemed specimens in the greenhouses of Europe.

Central American countries have always been a fertile field for orchid pursuit. Colonel Charles Lind-

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[10] Mackay, Julian, "What Price Orchids?" *The Mentor*, Vol. 16, No. 311 (January 1929), pp. 58–59.

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epiphyte (ĕp′ĭ fīt): A plant growing on other plants but not feeding on them.
genealogical (jĕn′ ė *ȧ* lŏj′ĭ kăl): Pertaining to the history of the descent of a person or family from ancestors.

bergh, on a flight in the winter of 1929, reported having seen the flash and glow of orchid hues whenever he swooped low over southern jungles.

The Central American natives have become remarkably successful in cultivating the flower, especially in Costa Rica. Here the popular rose-purples, the yellows, the whites, may be seen blooming along many of the streets in baskets hanging from tree branches. The favorite of the natives of Panama is the Holy Ghost orchid—a strange waxy-white flower about two inches broad, resembling a dove with outstretched wings.

This birdlike flower is listed in the stud books under the name *Peristeria Elata*. Almost all orchids bear equally high-sounding names and are entered in registers of pedigrees, after the fashion of nobility and race horses.

Raising and crossbreeding these tropic plants has become an extensive industry in temperate zones. Fortunes are often involved, and specialists give their entire time to the culture of unusual specimens. But, despite all modern ingenuity, growing the rare flower is more of a game—and a gamble—than a cut-and-dried business enterprise.

The orchid, if it is to thrive outside the tropics, requires more constant attention than any other cultivated plant. According to some of its devotees it will wilt and die if slighted. Atmospheric conditions of the jungles are duplicated as nearly as possible in greenhouses. The temperature is generally kept hot and humid, but periodical changes are artificially arranged to correspond with the wet and dry seasons of native climes.

Orchid seeds are minute and light as dust. They are placed on moss with a fine brush, a delicate operation, and then covered with bell glasses. Air conditions beneath the globes must be carefully adjusted. The plants ultimately grow on bark or in various prepared combinations of fernroot, potsherd, charcoal, and sand.

Arranged on shelves, or swinging in their latticed baskets from a greenhouse ceiling, the gorgeous plants present an unforgettable spectacle. Listless, weird, fragile, almost unearthly, each plant represents a world of patience and skill on the part of some professional or amateur grower.

As the Holy Ghost orchid resembles a dove, other varieties of the flower bear likeness to a butterfly, a moth, a swan, a slipper, a cradle, a canoe. Their colors are infinite, including every shade of pink, red, crimson, yellow, orange, blue, purple. Some of the plants grow ten feet high, others only a few inches. The flowers appear singly, in twos and threes, in masses and in sprays.

From fifteen to twenty months are usually required for the seed of an orchid to sprout, and five to twelve years for a plant to mature and bloom. During the period of development the grower is subject to all the worries of a parent rearing a child. In case of crossbreeding, the hybridist lives in anxious anticipation. If venturing an untried "crossing," he may be ill rewarded for his trials and pains. But there is always a chance that a prize novelty will be produced and that his labors will be crowned by a rainbow with a pot of gold at the end.

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

$\frac{\text{No. words} \quad 955}{\text{No. seconds}} \times 60 =$ ____WPM

Comprehension Check

1. The first scientific research expedition concerned with orchids was led by (a) an American (b) an Italian (c) an Englishman (d) a Frenchman.

2. Orchids are (a) parasites living on sap from trees (b) self-supporting plants living on minerals from the soil (c) self-supporting plants living on dead moss (d) self-supporting plants drawing their sustenance from the air.

3. They generally grow in (a) marshes (b) deserts (c) meadows (d) crotches of trees.

4. The hunter of orchids usually obtains the flowers by (a) shinnying up poles (b) pulling the blossoms in with a rake (c) cutting down trees (d) climbing trees.

5. Countries which have always been a fertile field for orchid pursuit are those of (a) Africa (b) Central America (c) Asia (d) Europe.

6. The favorite orchid of the natives of Panama is (a) the swan orchid (b) the cradle orchid (c) the Holy Ghost orchid (d) the canoe orchid.

7. Those who raise orchids artificially must (a) keep the temperature and humidity always the same (b) change temperature frequently (c) change humidity frequently (d) change the temperature and humidity periodically to correspond to wet and dry seasons.

8. Orchid seeds are planted (a) by placing one at a time deep in the soil (b) by placing them in the crotch of a tree (c) by scattering them with the wind (d) by placing them on moss with a brush.

9. Orchid flowers always appear (a) in twos (b) singly (c) in a variety of ways (d) in masses.

10. The period of time that it takes an orchid plant to mature is (a) fifteen to twenty months (b) five to twelve years (c) two to four years (d) twelve to fifteen months.

Comprehension score: ____ WPM: ____

CHAPTER 6

READING AND ORGANIZING DETAILS

SKILLS NEEDED IN GRASPING DETAILS

In Chapter 5 you had practice in finding main ideas in paragraphs. In some of your reading, it may be that finding the larger basic ideas will serve your purpose. In much of the studying that you have to do in school, however, you need to grasp and understand detailed information. Reading for details is much more difficult than reading for main ideas. There are ways, however, of learning to grasp details easily and quickly. With practice you can improve your ability to read detailed information. As with all other reading skills, there is no end point of improvement in reading for details.

Finding the main idea in a paragraph is the first step to take in reading for details. We might compare a paragraph to a bunch of grapes—the stem is the main idea, and the tiny branches with grapes on them are the smaller ideas growing out of the main idea. When we consider the details in a paragraph as "growing out of" the main idea, then we can get a total "picture" of the paragraph that enables us to see the details in their right relationship to the main idea and to each other. This is the secret of doing a good job in reading material packed with detailed facts.

In learning to grasp these relationships rapidly, you need, of course, to know how to find the main idea quickly and accurately. In addition you need to improve your ability to use two other important skills: (a) discriminating between main ideas and details, (b) organizing details around the main ideas to which they are related. After considerable practice in analyzing paragraphs and organizing details, you will reach a point at which you will quickly grasp groups of meanings rather than small, isolated scraps of ideas.

FINDING MAJOR DETAILS

All details are not of equal importance. There are *major* details and *minor* details. If you mistake minor details for major details, you are apt to give incorrect answers to some of your examination questions or to make an inadequate presentation of information that you have been gathering for a report.

Diagraming Major Details

First in this section you will be given practice in finding *major* details only.

The simple paragraph below will be used to illustrate procedures for noting the main idea together with its *major* details. Read this paragraph quickly and see if you can "spot" the main idea.

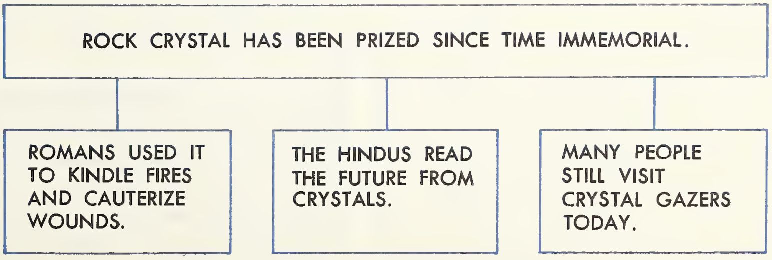
> Rock crystal has been prized since time immemorial. The Romans used it to kindle the sacred fires, and to cauterize wounds. The Hindus made the practice of reading the future from crystals an elaborate art. There are many people of the present day who still visit crystal gazers to get advice on finances, love or health.

No doubt you discovered at once that the main idea is: Rock crystal has been prized since time immemorial.

Now find three details of about equal importance that expand upon or tell more about this main idea. Sum up these details in as few words as possible.

Your summary of these details should be something like this: (1) Romans used it to kindle fires and cauterize wounds, (2) The Hindus read the future from crystals, (3) Many people of today still visit crystal gazers.

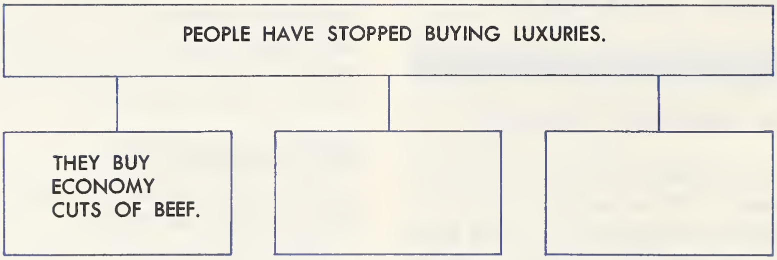
Think of this whole set of details together with the main idea as representing just one cluster of related ideas. Possibly a block diagram will help you to see this paragraph as a total unit with relationships between the parts.


ROCK CRYSTAL HAS BEEN PRIZED SINCE TIME IMMEMORIAL.
ROMANS USED IT TO KINDLE FIRES AND CAUTERIZE WOUNDS.
THE HINDUS READ THE FUTURE FROM CRYSTALS.
MANY PEOPLE STILL VISIT CRYSTAL GAZERS TODAY.

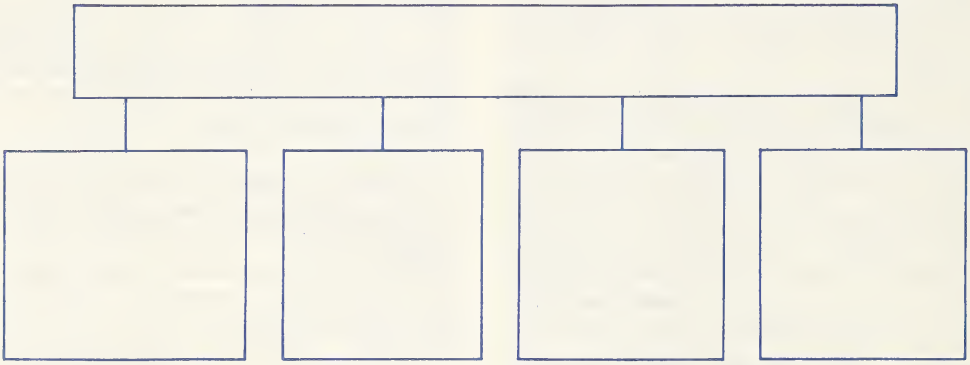
No doubt the details were easy to grasp in the diagram on page 35. Now see if you can sort out the details in the paragraphs below.

Organizing has been partially done for you in the first diagram below. Complete this diagram. Fill in all of the spaces in Diagrams 2 and 3 by yourself.

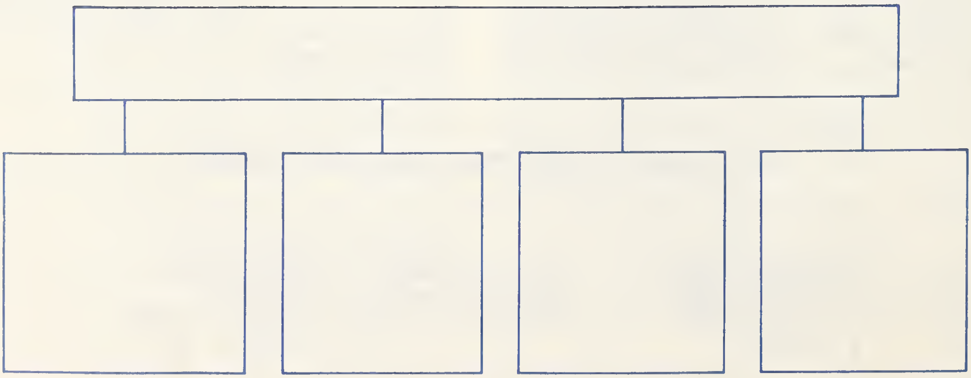
"People have stopped buying luxuries," reports the owner of a chain of food stores. "They buy economy cuts of beef instead of steak and lamb chops. They buy cake mixes and make their own cakes instead of buying ready-baked cakes. They buy fewer exotic foods."


PEOPLE HAVE STOPPED BUYING LUXURIES.
THEY BUY ECONOMY CUTS OF BEEF.

Between 1665 and 1670 some French-Canadian bachelors received help in getting wives. Shiploads of young ladies came to the cities of Montreal and Quebec from France. On their arrival marriage markets were held in halls. Each young man who had cleared farm land and built a house came. He then was allowed to choose a girl and to try and persuade her to marry him.



Much has been written about the "singing" or "barking" sands found in different parts of the world. The sands in Bell Mountain, Arabia, are said to give a sound like the chime of bells. The sands of Mount Sinai are said to give out musical notes like a harp increasing to sounds like thunder. Near Manchester, Massachusetts, sands on the beach give a crackling sound when walked upon. In a great many other places sand makes a sound very much like the humming of telegraph wires.



Outlining Major Details

Now you may use an outline form for stating the main idea and major details.

Paragraph No. 1 has been outlined for you. You are to outline paragraphs 2, 3, and 4 by yourself. Label the main idea *Roman numeral I* in each case. Label the major ideas *A, B, C,* etc. Pay no attention to the smaller ideas at this time.

1. The wheat plant from which a large part of our food comes is eaten by many different insects. The cutworm and white grub are examples of insects that feed on the roots. Others, such as the stalk borer and army worm, eat stems, causing stalks to fall to the ground. Grain weevils and beetles eat the grain either in the stalk or after it is harvested. Still other insects eat or spoil the flour if they can get into it.

I. The wheat plant is eaten by many insects.
  A. The cutworm and grub feed on the roots.
  B. The stalk borer and army worm feed on the stalks.
  C. Weevils and beetles eat the grain.
  D. Other insects eat or spoil the flour.

2. If you want to be an interesting guest, cultivate a memory for anecdote, for the odd and interesting fact which can be trotted out when conversation lags. When you hear a good story, file it away in your head for the appropriate moment. Do as any good actor does; rehearse it in private before you try it on an audience. If it makes it a better story to exaggerate a little in the telling, do so, as exaggeration is part and parcel of good storytelling. Brevity is important also, so be brief.

I. ______________________________
____
  A. ______________________________
  ____
  B. ______________________________
  C. ______________________________
  D. ______________________________

3. Education has been called the key to the future of the Indians. In 1961 there were more than 43,000 Indians enrolled in our Canadian schools. Of this number one in every four students attended a non-Indian school. There are more than 100 Indian teachers teaching in Indian schools. Today Canadian Indians are using their education to make a fine contribution in many walks of life.

I. ______________________________
____
  A. ______________________________
  ____
  B. ______________________________
  ____
  C. ______________________________
  ____
  D. ______________________________
  ____

4. Egerton Ryerson worked for many years to develop the school system in Ontario. As a boy he was eager to learn. He was appointed superintendent of schools for Upper Canada at the age of thirty-three. Year by year he fought to bring in a series of educational measures. Two of these features were free education for all children and the establishment of teacher training institutions. He brought about so many changes that he was called the founder of the Ontario school system.

I. ______________________________
____
  A. ______________________________
  ____
  B. ______________________________
  ____
  C. ______________________________
  ____
  D. ______________________________
  ____
  E. ______________________________
  ____

FINDING MINOR DETAILS

A major detail often is accompanied by a cluster of minor details. These minor details tell more about the major detail just as major details tell more about a main idea.

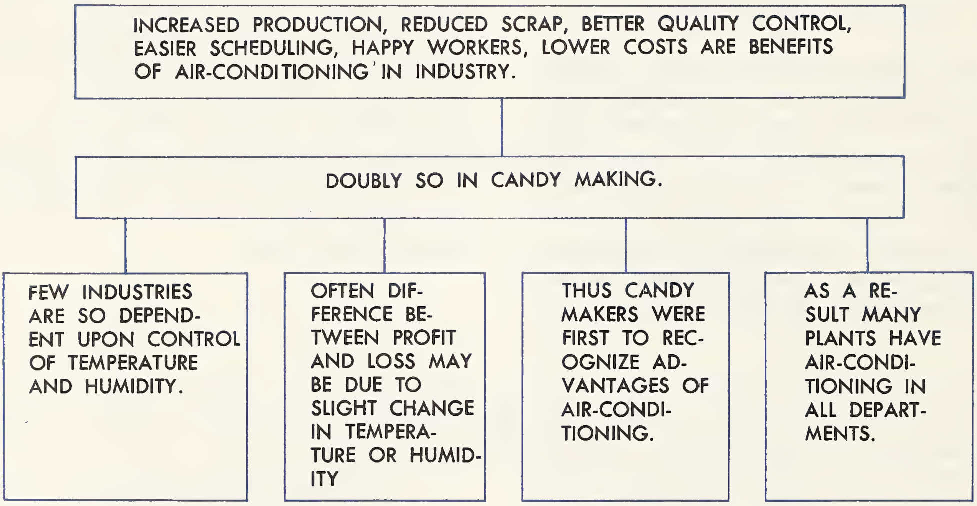
In some of your reading the grasping of the major details which expand the main ideas will serve your purpose. There are a number of paragraphs in which the main idea is expanded by parallel major details, only. Minor details are not given. If you are reading material which is made up of such paragraphs, or if you are reading material in which you are only interested in grasping major ideas, then the procedures which you have practiced on pages 27-37 will enable you to do such reading effectually.

There will be occasions, however, in which you will need to read major details together with related minor details. In science, history, geography, and economics, you frequently find this kind of reading content, and for study purposes it is necessary for you to grasp and understand all of the minor details as well as the larger ideas.

If you are studying fact-packed material in which it is necessary for you to understand and perhaps reproduce all of the details, then try to visualize each paragraph as an organized whole. See if you can "picture" each paragraph with its main idea standing out prominently and accompanied by major details; and in turn try to visualize each major detail as accompanied by its cluster of minor details. Once you visualize these relationships, you will have no trouble absorbing minor details in material in which there are many small facts.

Finding and Blocking Off Minor Details

Major details accompanied by clusters of minor details occur in paragraphs in all sorts of combinations. In some paragraphs there is just one major detail under the main idea, together with its cluster of minor details. For example, in the paragraph which is blocked off below, you will note that only one major detail appears under the main idea; but this one major idea is accompanied by a cluster of four minor details.



INCREASED PRODUCTION, REDUCED SCRAP, BETTER QUALITY CONTROL, EASIER SCHEDULING, HAPPY WORKERS, LOWER COSTS ARE BENEFITS OF AIR-CONDITIONING IN INDUSTRY.

DOUBLY SO IN CANDY MAKING.

FEW INDUSTRIES ARE SO DEPENDENT UPON CONTROL OF TEMPERATURE AND HUMIDITY.

OFTEN DIFFERENCE BETWEEN PROFIT AND LOSS MAY BE DUE TO SLIGHT CHANGE IN TEMPERATURE OR HUMIDITY

THUS CANDY MAKERS WERE FIRST TO RECOGNIZE ADVANTAGES OF AIR-CONDITIONING.

AS A RESULT MANY PLANTS HAVE AIR-CONDITIONING IN ALL DEPARTMENTS.

In other paragraphs there may be two or three or more major details, each of which is expanded by one or several minor details.

Read the paragraph below quickly to find the main idea.

1. The Canadian Arctic is a beautiful and productive wasteland—a contradiction in terms. Beauty is evident everywhere. The land forms are of great variety ranging from the mountain peaks of the islands in the east to the monotonously flat, green river plains of the west. In spite of the harsh climate many animals and birds live in this region. The mammals range in size from the lemming, a small mouse, to polar bear, caribou and musk-ox while there are over eighty different species of birds. Myriads of butterflies and insects also abound. Though plant life tends to be sparse and dwarfed, about five hundred different flowering plants have been found, many of which have delicately colored flowers. But the Arctic is also productive economically. Furs, obtained by trapping animals, still remain one of the major exports. In recent times the commercially valuable forests have been exploited. But the main economic possibilities lie in the mineral wealth. Geologists have discovered uranium, gold, radium, silver and iron ore as well as gas and oil deposits.

You probably had no difficulty in discovering at a glance that the main idea is: The Canadian Arctic is a beautiful, productive wasteland.

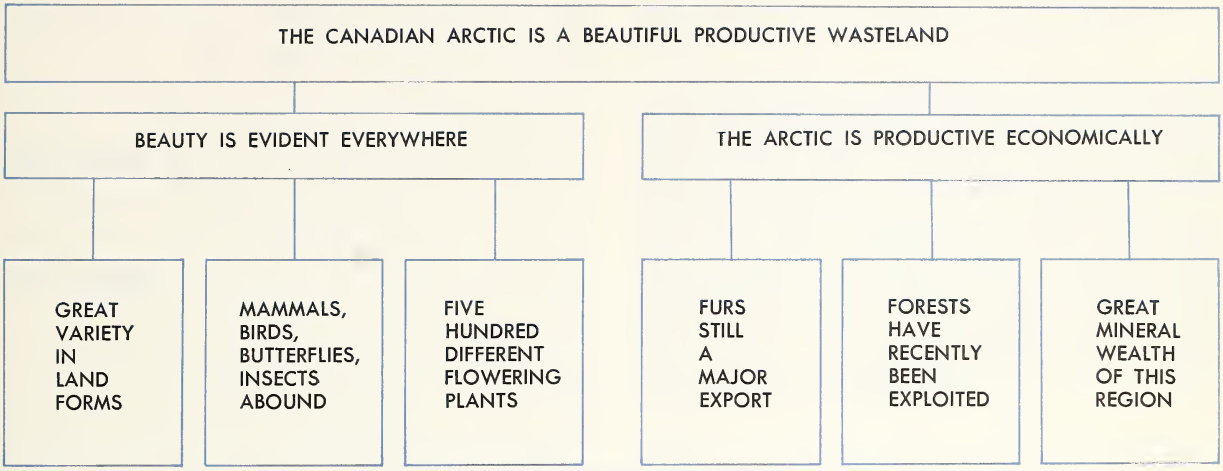
Now find two major ideas related to this main idea. Check or underline each of these major ideas.

These are the ideas which you should have chosen as major ideas:

1. Beauty is evident everywhere.
2. The Arctic is also productive economically.

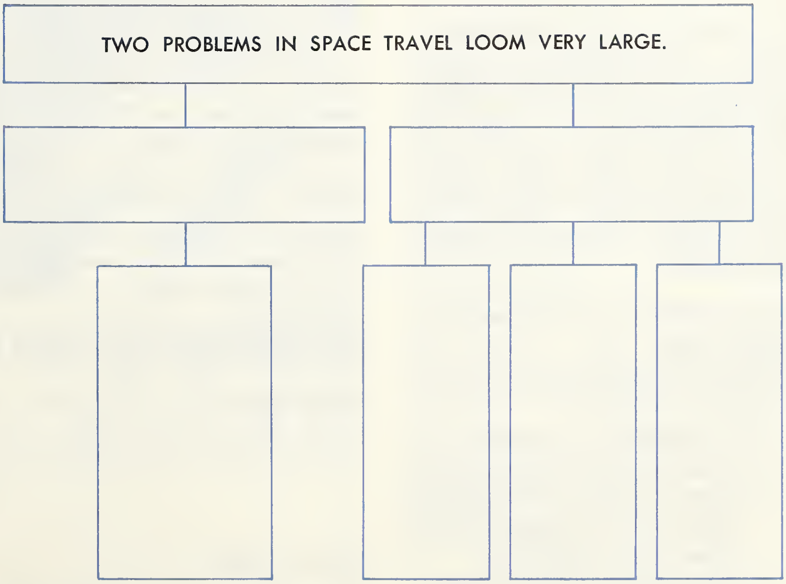
Next find a cluster of minor details that are related to the major detail about the beauty. Then find the exact details concerning the economic productivity. Instead of underlining, try to write a short summary sentence or phrase.

Check your answers with the block diagram below.


THE CANADIAN ARCTIC IS A BEAUTIFUL PRODUCTIVE WASTELAND
BEAUTY IS EVIDENT EVERYWHERE
THE ARCTIC IS PRODUCTIVE ECONOMICALLY
GREAT VARIETY IN LAND FORMS
MAMMALS, BIRDS, BUTTERFLIES, INSECTS ABOUND
FIVE HUNDRED DIFFERENT FLOWERING PLANTS
FURS STILL A MAJOR EXPORT
FORESTS HAVE RECENTLY BEEN EXPLOITED
GREAT MINERAL WEALTH OF THIS REGION

Two additional paragraphs, with a block diagram form for one, are presented on this page and on page 40. The first diagram has been partly filled in for you. Complete the block diagram for Paragraph 2, and make a block diagram form for Paragraph 3 by yourself, filling in each of the panels by writing the main idea, the major details, and related minor details.

2. Two problems in space travel loom very large. First, in space even a sealed cabin is easily pierced by atomic particles called cosmic rays. Long exposure to these particles may damage a man's brain. Second, the pilot's reaction to his predicament in space may be incapacitating. Speeding in a tiny cabin alone he will become bored. His isolation may cause Lim to become irritable. Under confinement he may become incapable of performing his few but very essential duties.



3. Different feathers on birds have different functions and shapes. The wing-tip feathers are called the *primaries.* They serve to propel the bird. They grow out of what corresponds to the bird's hand. The forearm feathers are the *secondaries.* These feathers are nearer the body than the primaries. They mainly support the bird in air. The tail feathers vary so much in birds that hardly any generalization can be made about them. They are located in a pincushionlike muscle mound. In some species this mound houses more than a thousand individual feather muscles. Each muscle moves one feather.

Outlining Paragraphs, Showing Major and Minor Details

Now you may practice finding major and minor details with the use of a different form—an outline. Read the paragraph below. Then study the outline that follows to see how the main idea, the major details, and the minor details are shown in relation to one another.

1. Uranium 235 is a little lighter than uranium 238. It can be separated from uranium 238 by heating. A uranium compound is heated to a very high temperature until it turns into gas. The molecules of uranium 235, which are lighter than those of 238, pass through several screens more rapidly than 238. Finally, the lighter 235 comes from the last screen in pure vapor and is cooled. Once this pure uranium 235 is made, scientists have a powerful material. With it they can start a terrific chain reaction. This chain reaction makes the atom bomb possible.

Main Idea I: Uranium 235 is a little lighter than uranium 238.
Major Detail: A. It can be separated from uranium 238 by heating.
Minor Details:
  1. A uranium compound is heated until it turns into gas.
  2. The molecules of 235, being lighter, pass through screens more rapidly than 238.
  3. 235 comes from the last screen in vapor and is cooled.

Major Detail: B. Uranium 235 provides scientists with a powerful material.
Minor Details:
  1. With 235 a terrific chain reaction can be started.
  2. This chain reaction makes the atom bomb possible.

Study this paragraph for major and minor details. Then complete the outline that follows the paragraph.

2. The thermostat is one of the best fuel savers and means of insuring comfort in the home. This device has many functions. It opens and shuts drafts and stops heating plants. It is even used to close radiator valves. In some cases it has been used to operate the electric refrigerator and the electric range. The thermostat is often controlled by a clock. This clock can cause the heater to start at a certain time in the morning and to stop at a certain time at night. It will even make the heat go on in the night if the house temperature drops lower than it should.

Main Idea I: ______________________________

____

____

Major Detail: A. ______________________________

____

Minor Details: 1. ______________________

____

2. ______________________

____

3. ______________________

____

Major Detail: B. ______________________

____

Minor Details: 1. ______________________

____

____

2. ______________________

____

____

Make your own outline for this paragraph. Be sure to show the main idea, the major details, and the minor details. Use a separate piece of paper.

3. Until 1850 man relied upon the power of wind to move his vessels through the water. Six thousand years before Christ the Egyptians were employing sails on their craft. The sailboat gradually evolved into the beautiful clipper ship that carried spices from the East to all parts of the world well into the nineteenth century. But when Fulton's steamboat made its first journey, the end of merchant sailing vessels was in sight. The many improvements that have been made in the last century have made sea travel safer and more comfortable.

GRASPING DETAILS MENTALLY

Men who travel in space are not the only ones who wear gas masks and carry oxygen tanks. The man in this picture wears a mask while at work on his job in a factory. The story below will tell you about poisonous gases against which many factory workers need to be protected.

Selection 1

The selection that follows is made up of several paragraphs, each of which contains details.

Read this selection without doing any pencil work. Find the main idea in each paragraph. Then find and read carefully clusters of ideas made up of a major idea together with its related minor ideas. You should now be able to sense this organization in detailed paragraphs as you read without outlining or diagraming.

See if you can grasp details *mentally* in this selection as you read. You will be checked on your grasp of detail afterwards.

Poisonous Gases Encountered in Industry[1]

Three common forms of poisonous substances encountered in industry and laboratories are mercury, phosphorus, and hydrogen sulfide. Mercury, the heavy liquid metal, causes much trouble. Many scientists have been accidentally sickened or poisoned by mercury or its compounds. Mercury poisoning produces nervousness, mental disturbances, tremors, and sore mouth.

Vapors of white phosphorus produce changes in the bone tissues. They may cause the teeth to decay. They may bring about the decay of the jaw bone known as "phossy jaw." Many countries have outlawed the use of white phosphorus in matches. Compounds of phosphorus and sulfur are used instead. The frequency of the "phossy jaw" disease has diminished considerably since protective laws were passed.

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[1] Ames, Maurice U., Arthur O. Baker, and Joseph F. Leahy, *Science for Progress*, Prentice-Hall, Englewood Cliffs, New Jersey, 1956, pp. 167–168.

Hydrogen sulfide gas is used in the chemical laboratories of many industries and in making colors or pigments. Hydrogen sulfide is a very poisonous gas. In small amounts it causes inflammation of the eyes. In larger amounts it paralyzes the breathing centers of the body and can cause death.

Stringent laws aimed at the protection of workers have led to the development of protective apparatuses. One of these is the gas mask. It consists of a rubberized fabric fitting closely over the face. A can called a canister is connected to the mask by a tube. The canister is filled with filters and chemicals that absorb and neutralize the dangerous gases. The purified air then passes through the tube into the mask.

CHECKING ABILITY TO GRASP DETAILS MENTALLY

1. Mercury causes much trouble. What were two detailed statements that were made in regard to these troubles?

(a) ______________________________

____

(b) ______________________________

____

____

2. Phosphorus vapors produce changes in bone tissue. What two changes were mentioned?

(a) ______________________________

(b) ______________________________

3. Hydrogen sulfide is a very poisonous gas.

(a) What damage does it do in small amounts? ______

____

(b) What damage does it do in large amounts? ______

____

____

4. Give the details that describe a gas mask, and tell how it protects the wearer from poisonous gases.

(a) ______________________________

____

(b) ______________________________

____

(c) ______________________________

____

(d) ______________________________

____

Allow a score of 5 for each part of each question that you have answered correctly.

Comprehension Score: _____

Reading Rapidly to Grasp Details

The selection below tells about Headless Valley. It gives many interesting details about this valley which you will enjoy reading.

In working with this selection try your speed in reading for details. You cannot read and grasp details in a selection that contains many facts as rapidly as you can read easy material for plot or general ideas. With practice, however, you can learn to read this kind of material more rapidly than you do at the present. By using the technique of looking for clusters of related details, you can cover pages of detailed information effectively and at a fairly rapid pace.

Time yourself in reading this selection. Push your mental process along as fast as you can and still grasp the clusters of details. You will be checked on your grasp of detail afterwards.

Selection 2

Headless Valley

Beginning time: Hr. _____ Min. _____ Sec. _____

North of the point where the border of Yukon, B.C., and the Northwest Territories meet, is the South Nahanni River Valley. Awesome canyons and forbidding mountains have discouraged exploration of this valley of mystery and fantastic legends.

There was the legend that head-hunters and huge, prehistoric mastodons inhabited the valley. People feared to enter, but from time to time, men, lured by the legend of a lost mother lode, said to be somewhere in the Flat River area, dared the terrors of the sinister valley. Some men vanished. The skeletons of others, some decapitated, were found by horrified searchers. Thus substantiated, the legend of the head-hunters flourished and Nahanni Valley came to be called Headless Valley. The few men returning, told spine-tingling stories of wailing cries, ghostly, misty shapes, mysterious cliff dwellers, and Mongol Caves. Legend also had it that in this sinister valley was a place of tropical climate and growth where there were rare and exotic plants and animals. People dwelt in wonder on this fascinating thought of a place of tropical warmth and beauty amid the cold Northland.

However, as the twentieth century advanced, cold common sense began to dispel the mists of superstition and legend that shrouded Headless Valley. Indians had probably told stories of head-hunters and wailing spirits to keep out the white man. A Nahanni Indian had brought out some gold once and claimed to have found it in the Flat River area. Hot springs were found but no tropical climate or growth. The Alaska Highway passes through this area now.

Indians had brought out drawings of mastodons, but the bones of mastodons were plentiful from the Peace River north. Weird wailing can be heard, but it is made by the wind rushing down stupendous canyons. There are wispy floating forms—made by rain, mist, or low-flying clouds. There are caves—made by erosion. The men who never returned probably starved to death or drowned. One supposed victim of Headless Valley was rumored to be in Vancouver spending gold. Only one skeleton was found without a head. It was believed that a wolf had dragged away the skull.

And yet—in 1927 "Yukon Fisher's" bones were found near the reputed site of the lost mother lode. In 1928 a prospector left his party and was never seen again. In 1931 a burned cabin containing a skeleton was found. In 1936 two men disappeared. In 1946 an explorer vanished. In 1962 a plane crashed on a mountain in Headless Valley and its pilot, although not badly hurt, vanished after 46 days.

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

$$\frac{\text{No. words} \quad 425}{\text{No. seconds}} \times 60 = \underline{\hspace{3em}}\text{WPM}$$

CHECKING ABILITY TO GRASP DETAILS

1. What is the general topic of this selection? ______

______

2. (a) Where is it located? ______

(b) What physical features have discouraged its exploration? ______

______

3. There was a legend that head-hunters lived in the valley. What fact substantiated this legend? ______

______

4. There were three other major legends. What was the topic of each?

(a) ______

______

(b) ______

______

(c) ______

______

5. Frightening stories were told by the few people who returned from Headless Valley. Briefly give accounts of three of the stories.

(a) ______

______

(b) ______

______

(c) ______

______

6. Facts probably formed the nucleus of each legend. Indicate the basis of each legend.

(a) ______

______

(b) ______

______

(c) ______

______

(d) ______

______

7. The superstitions and horror stories attached to Headless Valley have factual explanations. State these below.

(a) Wailing cries ______

______

(b) Ghostly shapes ______

______

(c) People who entered the Valley and vanished ______

______

(d) Mongol Caves ______

______

8. Recent travelers in the Headless Valley suggest that sinister forces still prevail. Name two of these.

(a) ______

______

(b) ______

______

CHAPTER 7

READING TO RECALL FACTS

Another important skill, particularly for students in high school, is that of remembering what you read. Perhaps you understand what you read while you are reading, but when you take an examination, or make a report, or try to enter into class discussion, do you find that you cannot readily recall several of the important facts that you would like to have at your command? Even if you can recall what you've read fairly well, there may be easier or quicker ways of fixing facts in your mind than those that you are using. Practically everyone can improve his ability to recall what he reads by applying what we know about remembering.

USING HELPS IN REMEMBERING WHAT YOU READ

"Whip Up" Your Interest. Try to become interested in what you are about to read. If you approach a new chapter with the attitude of "I hate this," "What do I care about this," "This bores me," you may be pretty sure that you will have trouble later in remembering the contents of this chapter.

Interest Is a Powerful Aid to Memory. When you tackle a new chapter, first of all read the title and think about it. Does the topic touch your life in any way? How? If it is about something that happened in the past, how different is your life now because this happened? If the subject is one that doesn't touch your life at all, or you are totally unfamiliar with it, then certainly you will want to find out something about it.

Another way to develop interest in factual material is to change the title into a question and read to answer the question. The title of one of the articles in this book is "How Heating Systems Work." You might change this into the question, "How do heating systems work?" Then read to find the answer.

Some immediate use to which you may put the information should give you a strong motive for using techniques that will help you to remember it. Your interest will be stronger if you are definitely gathering information for an oral or written report, for intelligent participation in class discussion, for use in making a good grade in an examination.

No doubt you will discover other ways of developing an interest in factual material which at first glance may seem dull to you. Whatever you do, do *something* to "whip up" your interest in the information you wish to recall. Start with an attitude of interest!

Be Selective. Select what you want to remember. Don't try to remember *everything* on the page. Select the main ideas, or the clusters of details, or the numbers, or the particular things that you wish to remember. Think as you read and select carefully those things that you wish to have remain in your mental storehouse.

Develop Strong First Impressions. When you begin to read, try to keep your first impressions strong and clear. If you mull over a chapter the first time you read it, you are off to a bad start in remembering the information it contains. Think clearly as you read a page the *first* time and make sure that you understand what it says. Strong first impressions are very important in recalling what you read later on.

Concentrate Attention. Concentrate attention on those items that you think you will want to recall. Stop and think about them and consciously try to fix them in your mind. Definitely strive to lay this particular information away so firmly that it will be there when you want it again. Shut out all other distractions and give your full thought, time, and energy to the job at hand.

Take Time to Think. Reading to recall what you read should not be just a routine matter of memorizing bare facts. To be successful in recalling, you need to take time while you are reading to think, reflect, synthesize related parts, and get the entire "picture," with details marching along where they belong in the total formation. This cannot be done hurriedly. Speed reading techniques usually have little or no function when a person is reading for the express purpose of recalling facts.

Repeat the Information to Yourself. After you have tried to fix an idea or a group of ideas in mind, then raise your eyes from the page and repeat the information to yourself one or two or more times. Each time you are ready to repeat a new idea or group of ideas, go back and repeat all of the others that you have repeated to yourself previously. Recalling the whole chain of facts or ideas as one leads into another is a procedure which is much superior to that of trying to remember and recall separate facts or ideas by themselves.

Review at Spaced Intervals. You may master what you wish to recall in a selection very well the first time you study, and still not be able to recall several parts of it tomorrow or next week. If you wish to lay away information permanently, go back to it and review it often over a long period of time.

RECALLING MAIN IDEAS

Sometimes in your reading you may wish to remember main ideas, only. It is easier to remember main ideas than details. You can improve your ability to remember main ideas by applying the suggestions discussed on page 44. Try to make use of these suggestions in memorizing the main ideas in Selection 1 below.

1. This selection tells how to make your departure when you are calling in a home. You, no doubt, would like to be a good guest in other people's homes, and want to know how best to make your departure when you're ready to leave. This being the case, you will want to read the selection to find out what the seven points of departure are. In other words you will have tapped your interests as an aid in memorizing.
2. Now that your interest is established, *select* what you want to remember.
3. Read the first point of departure, and get a *vivid impression* of it.
4. *Concentrate* on remembering this point, and fix it in your mind.
5. *Repeat* it to yourself without looking at the book.
6. Continue in the same way with each additional point. After repeating each new point to yourself see if you can repeat all preceding points as well as the additional point.
7. Impressions are strengthened by utilizing several of your different senses while memorizing. Up to this point you will have *seen* the points you wish to remember. You will have *said* the points orally and *listened* to them.

Finally, it would be a good idea to *write* the points from memory. If you enjoy drawing, *sketch* stick figures to show the action of a person while engaged in each of the seven points of departure.

Some guests don't know when to leave. This boy started to make his departure several minutes ago but is still lingering on at the doorway. Probably his host and hostess wish he would say "Goodbye" and be on his way.

Selection 1

The Seven Points of Departure[1]

Every time you pay a call, there is a departure to be made. Many other occasions also require departures. In addition to calls, there are many times when people are together and must eventually separate. Who shall make the first move? This is sometimes a hard question, and we shall not attempt to answer it here. Let us assume that you are to make the move. Our immediate problem, then, is to determine how to do it.

All of us can call to mind guests who would not (possibly could not) take their leave. We may have lost patience with them. Would it not be fairer, however, to admit that the situation is a difficult one calling for special treatment? Approaching the matter in this frame of mind, I have given it much thought, and I now submit what I believe to be a complete solution. It is a solution, I may add, that has stood the test of actual practice. I shall present it analytically as "the seven points of departure."

One—stand up. It is not always easy to stand up. As in the case of a plunge into cold water, there is a mental hazard to be overcome. It is easier, of course, to squirm in your seat, to say, "Er . . . eh," to look toward the door, to wish that the rug under your feet were the Wishing Rug—to do anything, in short, but rise. To effect the necessary first move, an act of will is called for. Remember that you wish to leave and that it is difficult to do so without rising. Not impossible, of course. You *could* fall in a faint and be carried out. This maneuver, however, is a delicate one, not to be recommended except in great emergencies. Upon ordinary occasions a departure cannot be successfully engineered without rising. So face the inevitable and stand up. The beginner may hearten himself with the knowledge that rising in company becomes increasingly easy with practice.

Two—hold out your hand. Here again there is a mental hazard. Will it help to put your hands in your pocket? Need you wait for the end of the current anecdote? Should you accompany the offer of your hand with some banality such as "I must be running along"? No, all this is quite superfluous. Just hold out your hand. Most well-bred persons will understand the signal. But what if your hand is ignored? After all, one should be prepared for everything. Suppose your hostess is blind, distrait, occupied, rude. Does the rule fit such a situation? Of course it does. You will observe that nothing was said about shaking hands. It is true that this usually occurs; so much the better. If not, your hand will soon get heavy—drop it. This completes the gesture, and you are ready to advance to the next point.

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[1] Godson, William F. H., Jr., "The Seven Points of Departure," © 1933 by The Atlantic Monthly Company, Boston, Mass.

Three—say goodbye. Why say goodbye? People have often asked me this question, and I shall be frank about it. It is not strictly necessary from the utilitarian point of view. But it will save you from being considered odd. Since I devised my system, many of my acquaintances have tried to detain me. None has succeeded. This has occasioned much wonder among them, and yet I dare say that not one has suspected me of having a system. For this desirable state of affairs I give entire credit to the use of the word "Goodbye." I therefore recommend it.

Four—go to the door. If you think it is easy to go to the door, you have never seen a genuine victim of inertia in action. Such a one can spend hours between rising and leaving; he may even sit down again. So do not underestimate the difficulties at this point. Do not forget that in order to get to the door you will have to move your feet. Very well—move them.

Five—open the door. At this point you will get a real thrill of achievement. Like the first streak of daylight which brings hope to the victims trapped in a coal mine, the sight of the door will cheer you with its promise of ultimate escape. Often, of course, someone will take his stand between you and the exit. Go around him. Or, again, someone may reach the door ahead of you, only to possess the knob without turning it. This is not unusual, and you must be prepared to take whatever measures may be required to deal with this situation. Do not hesitate to strike down the offender in cold blood if need be. If the obstructionist is a woman, and you have scruples against hitting a woman, a playful push may do the trick. Choose a method to fit the circumstances, and open the door.

Six—walk out. The principle that applies here is precisely the same as that which I laid down under rule four. Think of the many groups you have seen leaning against open doors in different stages of exhaustion and boredom. For shame, do not lend yourself to such a scene. If you lose your courage at this point, your hostess will be sure to say sweetly, "Do come in and sit down again." This is a sure sign, which, like a football signal, means one thing, and one only. It means, "Walk out!"

Seven—walk away. And to carry off smoothly this final part of the program, you must not leave anything behind. But if you do leave something, let it go forever. What is a mere handkerchief or pencil? *Leave it!* I cannot say too emphatically—and I do so without fear of contradiction—that the most important part of my whole system is to walk away.

TESTING YOUR RECALL

Write the seven points of departure without referring to the selection.

One ______________________________

Two ______________________________

Three ______________________________

Four ______________________________

Five ______________________________

Six ______________________________

Seven ______________________________

RECALLING DETAILS

In most of your study of factual material you will want to recall details as well as main ideas. It is much more difficult to read to recall detailed facts than main ideas. In doing this latter kind of reading, you will need to use all of the suggestions given above, and more. Three additional techniques will prove useful to you in doing this kind of reading.

Previewing. Before attempting to study the detailed facts get an over-all picture of the general structure of the chapter. In other words, establish a framework in which to arrange the ideas. Read the title and think about it; read the boldface or italicized headings all the way through; study any pictures, maps, or graphs that accompany the text; read the first and last paragraphs.

As you do this preview you will get some idea as to what is important in the chapter and what is not. Don't start studying in detail at once. The general preview will give you a perspective which will aid you in selecting the right things for recall.

Grasping Details. While working with material in the preceding chapter you learned that details cluster around a main idea in a paragraph, expanding upon it and telling more about it. You had practice in grasping clusters of details in paragraphs in that chapter. The same techniques will be helpful to you in grasping details to remember when reading to recall facts.

In the preceding chapter, however, you worked only with clusters of details as they appear in paragraphs.

Now you will need to extend these techniques to grasping details in entire *topics*. One topic may be discussed in two or three or more paragraphs. In such a case the topic is the main idea, and usually each paragraph contains a cluster of ideas that enlarges upon the topic. Lay hold of the topic firmly, then grasp its important clusters of details in the paragraphs that accompany it. Once you have the topic clearly in mind, then try to see its details vividly in related clusters. If you do this you won't have much trouble in fixing the details in your mental storehouse.

Consider the main ideas stated in a topic. Ask "What is there to be said about this?" or "What does this mean?" Then find out by reading the groups of details that tell more about the topic.

Doing Pencil Work. In studying to remember facts you will find it helpful to use as many different avenues of impression as possible, that is, let the facts come to you through several different senses. When you read the facts you *see* them; when you repeat the facts to yourself you *say* them and *hear* them. Now use another avenue for receiving impressions—use your pencil and get the *feel* of working with them.

Some students find it helpful to write an outline of a chapter, then memorize the outline as a "skeleton" to use in recalling details. Still others prefer to write a summary, usually of one paragraph for each topic. Then they use this summary as a basis for recalling facts. Others who own books that they are going to keep permanently find it helpful to underline key words or parts of key sentences directly in the text. Then they refer to these underlined parts as a help in remembering facts. Of course, this technique should never be used in books owned by the school or someone else. Defacing a book which someone else will use is a thoughtless and unjustified thing to do.

You will have a chance to use each of these different kinds of pencil work in trying to remember facts in the four selections that follow. After trying all three of them, try to decide which one works best for you.

Integrating All That You've Learned

Now put together the several different suggestions that have been given in this chapter and apply them in studying the following selections for the purpose of recalling facts.

1. Start with an attitude of interest.
2. Concentrate your undivided attention on the job at hand.
3. Preview to get a "picture" of the total structure.
4. Try to get strong, clear first impressions.
5. Read *selectively* to grasp important ideas, but *think* as you read, and give close attention to related details.
6. Stop frequently as you go along, and repeat to yourself the facts you wish to remember, not as isolated facts but as related to the whole.
7. Do pencil work of some kind in which you write or mark important facts.
8. Use your pencil work in reviewing for recall purposes.
9. Check your recitation of the facts to yourself by referring to the text to see if you have omitted important information.
10. Make a special effort to tie in any points that you missed with other points which come before and after the missed points and to which the missed points are related. Then tell yourself the entire set of facts again. Continue until you are sure you recall all of the important facts you wish to remember.
11. Review and recite the facts tomorrow and the next day, and a week later and so on.

APPLYING SOME SPECIAL "READING TO RECALL" TECHNIQUES

Outlining Parts to Recall

Apply the suggestions on pages 44 and 45 in grasping and recalling details in the selection that follows. Use the outline technique for your pencil work. The outline is started for you. You finish it.

Selection 2

What Is the Nature of a Fuel? [2]

Fuels and Heat. Fuels are substances that contain quantities of free carbon, or carbon in combination with hydrogen and other elements. This means that they will burn readily, giving off large quantities of heat. Wood and coal are among the commonly used fuels for heating homes, cooking foods, making tools, and for other purposes. A look into the fire box of any coal furnace in use will show both yellow and blue flames, the yellow color indicating the presence of carbon, the blue color the presence of hydrogen. Both are called *fuel elements*. In burning wood, the flame is largely yellow.

Now plants are the fuel makers of the world, both past and present. Trees and ferns of long ago stored up the energy of the sun, were then buried for millions of years under great pressures, and slowly oxidizing, formed the coal and natural gas of today. Huge animals called dinosaurs also lived in millions of numbers at about the same time, and from them and plants we get petroleum and natural gas. Bogs 30 to 40 feet deep furnish a fairly good fuel called *peat*. This is even being formed in quaking bogs today. And, of course, our forest trees growing now furnish us with our wood fuel.

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[2] From Wood & Carpenter's *Our Environment: How We Use and Control It*, revised by George C. Wood. Reprinted by permission of Allyn and Bacon, Inc. Copyright, 1952, by Allyn and Bacon, Inc.

Natural fuels can be treated to produce coke, charcoal, kerosene, fuel oil, gasoline, alcohol, and artificial gas.

Relative Heat Values. Petroleum gives more heat, pound for pound, than any other fuel. Soft coal comes next, then hard coal, followed by hard and soft wood. Differences in the grades of any one fuel depend upon the nature of the deposits from which the coal was formed.

Wood, because of its relative abundance, is still a commonly used fuel, while fuel oils and gas are being used increasingly because of improved devices for using them. Gas, in spite of relatively poor heat value, is clean and dependable. Coal is still the leading fuel for industrial and home use. Automatic stokers and improved furnaces have largely overcome objections to coal as a fuel.

Coal Production and Supply. Some say that our coal supplies, at the present rate of use, will last us another 100 years, while others claim that we have a supply for another 3,000 years. The chances are, however, that this marvelous compound, composed of carbon, nitrogen, hydrogen, oxygen, sulfur, and other elements, will be used less as a fuel as the years go by. It probably will become our chief source of gasoline.

Chemists have found coal a veritable gold mine of materials which are extracted in the form of *synthetic products*. These are substances man makes after he has found out the way nature makes similar compounds. For example, chemists make medicines, food flavors, baking powder, butter, dyes, plastics, glass, saccharin, perfumes, mothballs, smelling salts, artificial rubber, and literally hundreds of other useful products from coal.

I. Fuels and Heat
  A. Nature
    1. Fuels contain free carbon—means they will burn readily.
    2. Wood and coal most common.
    3. Yellow flames—carbon; blue flames—hydrogen.
  B. Source
    1. ____________ 2. ____________
    3. ____________ 4. ____________
  C. Synthetic products
    1. ____________ 2. ____________
    3. ____________ 4. ____________
    5. ____________ 6. ____________
    7. ____________

Complete these parts of the outline:

II. Relative Heat Values

III. Coal Production and Supply

Testing Your Recall

After you have reviewed with the use of your outline until you are quite sure that you can recall the important facts, take the test below without referring to your outline or the selection.

1. What chemical element causes fuel to burn freely and give off heat? ______________

2. Which are the two most common kinds of fuel?

______________ ______________

3. Name four sources of fuel.

______________ ______________

______________ ______________

4. Name at least five by-products of natural fuels.

________ ________ ________ ________ ________

5. Name in order four fuels that have different heat values, beginning with the one that has the highest heat value.

________ ________ ________ ________

6. What kind of products do chemists make from coal?

____

7. Concerning the use of the different fuels, what distinctive thing was said about each of these:

Wood: ______________________

Oil and gas: ______________________

Coal: ______________________

8. In terms of years what are two estimates in regard to the length of time that the coal supply will last?

______________years ______________years

9. The chances are that coal will be used for something other than fuel in the future. What may it be used for?

____

10. Name six products chemists make from coal:

__________ __________ __________

__________ __________ __________

Check your answers with your outline or the text. Allow a score of 10 for each question answered completely and correctly.

____

SUMMARIZING PARTS TO RECALL

Read the selection below for the purpose of recalling details. Use a summary of each topic for your pencil work. There are two topics discussed in this selection. A summary of the first topic has been written for you. You are to find the second topic, read it, and write a summary of it.

Selection 3

What Events Encouraged People to Move Into the Last Western Territory?

The Homestead Act aids western settlement. In the 1870-80's two events encouraged rapid settlement west of the Great Lakes. The first was the Free Land Homestead Act passed by the Canadian Parliament in 1872. It had to do with public lands; that is, land that belonged to the Canadian government. Any man over 18 years of age who wanted a quarter-section of this land in the west had to pay only $10.00 and to agree to live on the land 6 months each year for 3 years. He was to improve the land by clearing a portion of it and by breaking 30 acres or by grazing a number of livestock. If this man fulfilled his obligations within the time limit set he could acquire a second quarter-section of land nearby for a small sum of money. Men who applied had to be British subjects or declare their intention to become such. Widows who had children dependent upon them for support could apply for a homestead.

Coming at the time it did, the Free Land Homestead Act had very important results. For many years the trappers had been traveling across the west returning each year to Ontario and Quebec to sell their furs. They told the people about the great open stretches of prairie where huge farms could be anyone's property cheaply. Many people wanted farms of their own so they decided to go west.

The transcontinental railway increases western settlement. The second important event followed close on the heels of the Free Land Homestead Act. This was the building of the first railway line across the continent. To encourage British Columbia to become a part of the proposed Dominion of Canada the government, under Sir John A. Macdonald, in 1871 promised the westerners a transcontinental railway. The promise was kept and the last spike was driven in by the officials of Canadian Pacific Railway in 1885 at Craigellachie, British Columbia. To encourage the building of the railway the government had instituted a policy of railway land subsidies. This policy set aside every odd numbered section of land in a belt 24 miles deep on either side of the completed railway line.

Over 25,000,000 acres of land were thus acquired by the Canadian Pacific Railway and were sold later to settlers for $2.50 an acre with a rebate of $1.25 for every acre broken and put to cultivation. Because of the ease of shipping grain and cattle by rail many settlers bought these sections. Despite the liberal homestead policy and the building of the Canadian Pacific Railway, however, the numbers of settlers dropped from barely 3,000 a year in the early 1890's to 1,800 in 1896.

A remarkable development followed. Gold was discovered in the Yukon and thousands traveled by rail to points in the west from which they could proceed north. Some of these who came to the northwest looking for gold nuggets settled in the western provinces with the more certain wealth of the rich farmlands. The farming area of Peace River northwest of Edmonton boasts some such residents.

A successful, thorough and systematic campaign for immigrants by Sir Clifford Sifton, Minister of the Interior, with the close cooperation of the railway, was a notable factor in encouraging people to move west. Continental Europeans and Americans both came in substantial numbers, the latter increasing in number from 700 immigrants in 1897 to 100,000 in 1911. A convincing argument in the United Kingdom increased British immigration from 9,000 in the 1890's to 20,000 in 1911. Not all of the people came west but many did and the number of homestead entries jumped from 1,800 in 1896 to 44,000 in 1911.

Because of the passing of the Homestead Act and the building of the Canadian Pacific Railway, many people came west, built their homes, and began a new life in the last western territory. Neither event would have been effective in settling the west without the other. Together they brought the people who wanted the new land to the places where the land was available.

Summaries

Summary of First Topic

The Free Land Homestead Act was passed by the Canadian Parliament in 1872. It enabled any man or widow to become the owner of a farm or homestead of 160 acres if he paid $10.00 and agreed to live on the land 6 months each year for 3 years. The fur trappers told the people in Eastern Canada about the vast areas of prairie land available for farming. Many people came west.

Summary of Second Topic

Testing Your Recall

After studying the summaries take this test to check your recall of detailed facts. Allow a score of 10 for each completely correct answer.

1. When was the Free Land Homestead Act passed?

2. What did the Homestead Act do in regard to public lands?

3. How did a man get a homestead?

4. Who told the people in Eastern Canada about the prairie land?

5. What was the second important event that increased western settlement?

6. What company undertook the building of the transcontinental railway? ______________________________

____

7. Why was the railway built? ______________________________

____

____

8. Explain the government policy of railway land subsidies. ______________________________

____

9. How did the discovery of gold affect the settlements of the west? ______________________________

____

____

10. Explain how the work of Sir Clifford Sifton aided the settlement of the west. ______________________________

____

____

Recall Score ________.

UNDERLINING PARTS TO RECALL

Read the science selection below for the purpose of recalling its important facts. Use the usual procedures suggested for use in reading to recall.

For your pencil work underline important parts of main idea sentences and of detail sentences. Then use the underlined parts in studying for recall. The underlining has been done for you in the first paragraph.

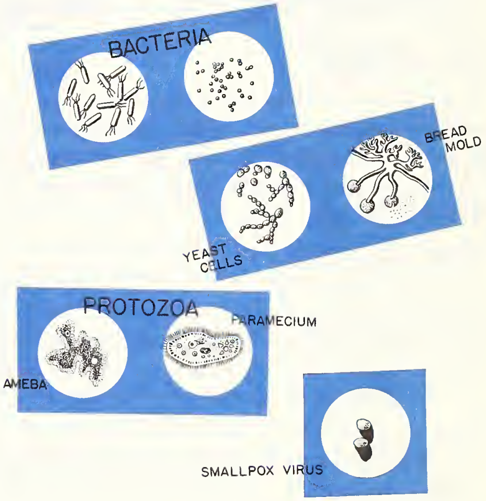
Selection 4

What Are Microbes?[3]

Microbes, or microorganisms, are tiny living things that can only be seen with a microscope. Most microbes are harmless, some are even useful, but some are very harmful to man. Since many of these microbes can cause deadly diseases, it will be useful to learn about them and how to control them. Those that cause diseases are called *germs.* Microbes are of four main types: (1) bacteria, (2) molds and yeasts, (3) protozoa, and (4) viruses.

Bacteria and Their Diseases. *Bacteria* are tiny, one-celled plants. The types of bacteria are grouped according to their shape. A round or ball-shaped form is called a *coccus* (plural *cocci*). An oblong or rod-shaped form is called a *bacillus* (plural *bacilli*). A spiral or curve-shaped form is called a *spirillum* (plural *spirilla*). Bacteria are very small, 1/10,000 to 1/50,000 of an inch in diameter.

Bacteria feed on other plants and on animals. Each kind of bacteria lives and multiplies only where it gets the food it needs. For example, the bacteria that cause tuberculosis live only in animal tissues such as the lungs, or in such animal products as milk.



These are some varieties of microbes enlarged a few hundred times. A virus is the smallest microbe. (The smallpox virus was seen only when magnified 25,000 times under the electron microscope.)

Molds, Yeasts, and Their Diseases. You have read about the wonder drugs—penicillin, streptomycin, and terramycin. They are made from harmless, thread-like plants called *molds,* which grow on food such as bread and cheese. There are molds, however, that can grow on human skin and cause diseases. Some of these diseases are *athlete's foot, ringworm,* and *barber's itch.*

Yeasts are single-celled plants that reproduce by a peculiar process called *budding.* Little growths or projections grow on an adult plant, break off, and then grow to maturity themselves. Most yeasts are harmless. Some are used in making cake, beer, and wine.

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[3] Ames, Maurice U., Arthur O. Baker, and Joseph F. Leahy, *Science for Progress,* Prentice-Hall, Englewood Cliffs, New Jersey, 1956, pp. 152-154.

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anopheles (*ȧ* nŏf′ē lēz): Any of a certain genus of mosquitoes.
coccus (kŏk′ŭs): A spherical bacterium.
streptomycin (strĕp′tō mī′sĭn): An antibiotic obtained from soil bacteria.
terramycin (tĕr′*ȧ* mī′sĭn): An antibiotic coming from molds.

A few yeasts and yeast-like organisms can cause serious ulcers and lesions of human skin and bone.

Protozoa and Their Diseases. *Protozoa* are tiny, one-celled animals. Very few protozoa (singular *protozoan*) cause human diseases. However, there are a few that are harmful. An example is the protozoan that causes *malaria.* This protozoan passes part of its life in the body of a human being, or in other animals such as a horse or cow, and part of its life in the body of an insect (the anopheles mosquito). A person can get malaria only when bitten by an anopheles mosquito that has these malaria protozoa in its body. *African sleeping sickness* is another dangerous disease that is caused by a different kind of protozoan, which lives part of its life in the body of a human being and part in the body of the tsetse fly. *Amebic dysentery* is a very serious disease caused by a protozoan called an *ameba.* This protozoan lives in the human intestines. In tropical countries where the sanitation is bad, it is not safe to eat raw vegetables, because they may be contaminated by these dangerous ameba. With bad sanitation, the human wastes from those who have this disease contaminate the soil.

Virus Diseases. The virus germs are usually much smaller than bacteria. Most of them are too small to be seen with an ordinary microscope. An electron microscope is needed. As yet, we know very little about the viruses. We know that the blood or excretions of animals sick with a virus disease can transmit the same disease to others. Scientists believe that the human diseases of colds, influenza, measles, smallpox, mumps, rabies, yellow fever, and infantile paralysis are caused by viruses. The virus-caused diseases have been very difficult to control.

Testing Your Recall

After you have followed through the procedures suggested for reading to recall facts, and have reviewed with the use of your underlined parts, take this test to see how well you can recall detailed facts in the selection, "What Are Microbes?"

1. What are microbes? ____________________

   ____

2. What are the four main types of microbes?

   ____________ ____________

   ____________ ____________

3. Name three kinds of bacteria; indicate the shape of each.

   ____________ ____________

   ____________ ____________

   ____________ ____________

4. What are three wonder drugs that are made from molds?

   ________ ________ ________

5. What human diseases can be caused by molds?

   ________ ________ ________

6. What are yeasts and how do they reproduce? ________

   ____

   ____

7. What serious conditions may be caused by yeasts in human beings?

   ____________ ____________

   ____

8. What are protozoa? ____________________

   ____

9. Name three diseases that can be caused by protozoa.

   ____________ ____________

   ____

10. Scientists believe that some human diseases are caused by viruses. Name as many of these diseases as you can.

    ________ ________ ________

    ________ ________ ________

    ____________ ____________

Recall score________.

Concluding Suggestions

You have now had practice in using procedures that are helpful in reading to recall details. How did you do? Did you make good recall scores?

Continue to use the general techniques suggested when you are doing work in your textbooks in connection with which you are supposed to grasp and retain details. Use the type of pencil work which seems to serve you, personally, to the best advantage. In working with the selections in this chapter, which type of pencil work was most useful to you: Outlining? Summarizing? Underlining? Perhaps you will wish to experiment further before deciding which one you prefer. Even after you have decided, there may be times when you will use each of these or some other technique as it best serves a particular purpose and a special kind of text. Different purposes and different kinds of text call for different techniques.

CHAPTER 8

HOW TO SKIM

These men are working in a pitch lake in Trinidad. The ones at the left are wearing rubber headpads to cushion their loads.

The men are cutting large chunks of asphalt from the lake. Each chunk that is taken out leaves a hole. By the next day, however, the hole has filled up.

You will find out more interesting information about this lake when you skim the selection on the next page.

WHEN AND HOW TO SKIM

Skimming is the most rapid kind of reading, and it is at the same time the most complex of the reading skills. It makes use of several of the other skills previously discussed in this book. In skimming you need to be skillful in previewing, in following direction words, in finding the main idea, and in grasping details. Now that you have had practice designed to improve your ability in using these other skills, you are ready to develop a high level of skimming ability. No matter how well you skim now, you can learn to skim better.

If your skimming ability is to serve you to the best advantage, you need to know *when* to use it as well as *how* to use it. There are certain times when skimming is very valuable to a reader, and other times when it is of no use at all. The skimming skill would be quite inappropriate when you are reading to grasp details as you did in Chapter 6, or when you are reading to recall facts as you did in Chapter 7. If you were reading to enjoy a beautiful and interesting descriptive passage or poem, as you will be doing in Chapter 12, skimming would not be the skill to use.

On the other hand you will find that a highly developed ability to skim will be of inestimable value to you in such situations as these: previewing a chapter to grasp its general content and structure; reviewing text or notes for examinations; examining tables of contents and indexes in search of a particular item; examining a novel to decide whether or not you wish to read it; examining an informative book to see if it really does contain the specific facts you want; reading light informative or fictional material for general impressions only; browsing through a newspaper to grasp headlines and select items you wish to read.

As to the *how* of skimming, there are two things upon which you will need to direct special effort:

(1) You will need to step up your mental tempo to a much higher rate than usual. Think with lightning speed as you fleetingly glance over the page for what you want.

(2) You will need to develop an attitude of abandon about skipping large portions of content. Skip them with no feeling of guilt, because you are not supposed to be reading every word. Speedily gather what you want, and never mind the rest.

Keep these two ideas in the foremost of your consciousness as you practice skimming the selections that follow.

SKIMMING TO MAKE A PREVIEW

Are you previewing as rapidly as you can? You can save time if you *skim* when you preview; that is, just sweep your eyes fleetingly over the title, subheads, illustrative material, and perhaps the first and last paragraph. Do these things at the fastest speed of which you are capable.

No doubt you have already examined the picture above and read the explanations about it. Now see if you can preview the following selection in ten seconds by quickly grasping the title, the italicized headings, and the first sentence of the selection. Then test yourself on what you got from your preview. Do Activity 1. Even if you do not finish in ten seconds, stop after that time has passed and take the test anyhow. Allow a score of ten for each correct answer that you can make as a result of your skimming.

Selection 1

Trinidad—Where the Pavement Begins [1]

On a day in midsummer, Christopher Columbus, then on his third voyage of discovery, sighted the island of Trinidad in the West Indies. Amid great rejoicing and under a brightly shining sun, he raised the red and yellow banner of Spain and took formal possession in the name of King Ferdinand and Queen Isabella.

An asphalt lake discovered. Columbus believed that he had found a new continent, but in reality it was just another island—an island, however, with a most curious natural feature. A mile from the shore a great pitch lake was discovered, future source of endless miles of asphalt pavements.

Tradition and science explain. How the asphalt got there has always been a mystery. The Cariban Indians who inhabited the island when Columbus landed told a weird tale. Enemies had destroyed sacred hummingbirds which abounded in Trinidad and on account of this act the Indians believed the Great Spirit had caused a seething, molten lake of pitch to be formed in which the invaders were destroyed.

Science gives a more practical explanation, asserting that the asphalt was formed by wells of petroleum far beneath the surface which were slowly forced upward by the natural gas and volcanic action. By this process the oil was mixed with a very fine clay and, in time, as the material cooled, a substance called asphalt was created.

The lake is dry, dark, and miry. The lake, bedded in the crater of an extinct volcano, and of unknown depth, covers a nearly circular area of 114 acres. It looks like a large, round pond gone dry, with here and there rivulets of water and patches of green vegetation. The asphalt itself, blackish-brown in color, has been compared to the skin of an elephant, and the irregular creases to the folds in the hide.

Stepping upon the surface of the lake gives one the feeling of walking on velvet. Donkeys resting in the heat of the sun half an hour or so will often sink to their hocks.

Asphalt is loaded in cars. A narrow-gauge railroad is laid across the lake on bamboo ties, on which small cars are run to the edge of the lake and there emptied into big buckets that are carried by a cableway to the shore. As the asphalt has a constant creeping motion, caused by the gas underneath, the rails have to be aligned almost daily.

Supply seems inexhaustible. And here is another mystery: The asphalt is dug out of the lake and loaded in chunks into the cars. The next morning the excavation is filled up again! The place may appear a little rough, but it is approximately level with the rest of the lake. This, it has been determined, is caused by the entire mass of asphalt settling. There is no such thing as "new" asphalt, because it takes centuries to form and cool.

Millions of tons of asphalt have been taken from the Trinidad lake and sent to almost every part of the world, where it is used for paving and other purposes, but there seems to be an inexhaustible supply.

Trinidad gains its independence. For more than three hundred years the island of Trinidad remained a Spanish possession, but in 1797 it was captured by the British fleet. Until 1962 it constituted one of Great Britain's most important and prosperous West Indian colonies. In August of that year it was granted full independence.

ACTIVITY 1

What did you find out in ten seconds? Write your answers.

1. What does the title tell you about the use of a product from Trinidad? ________________
2. Who discovered Trinidad? ________________
3. Of what group of islands is it a part?

____

4. What does the lake contain? ________________
5. From what two sources do we get an explanation of this lake? ________________
6. Describe the lake with three words. ________________

________ ________

7. How is the asphalt transported from the lake?

____

8. What tells you whether there is a good or meager supply of asphalt in the lake? ________________

____

9. To what countries did Trinidad belong? ________
10. Write a short sentence summarizing the important information that you gathered while skimming to preview this selection. ________________

____

____

Comprehension score: ______

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[1] Hopley, Frank Dorrance, "Trinidad—Where the Pavement Begins," *The Mentor*, Nov. 1924, p. 50.

Carib (kăr′ĭb): An Indian of the Cariban tribe.
align (ȧ līn′): To bring into line.

SKIMMING TO GATHER MAIN IDEAS

In some of your reading, you will want to read into the text enough to get the gist of what it says, but you won't care about the details. Skimming for main ideas will enable you to accomplish this purpose in the shortest possible time.

You have already learned how to locate main ideas. In taking the next step of *skimming* for main ideas, follow these procedures:

1. Formulate a purpose for reading the main ideas. For example, in working with the selection below you may set for yourself the purpose of finding out why the ghost town refuses to stay dead.
2. Skim in making a preview.
3. Skim in finding main ideas. Rapidly spot the main idea in the first paragraph. Then sweep your eyes with high speed to the next paragraph and grasp the main idea in that paragraph, and so on. Locate and grasp the successive main ideas just as fast as you can force yourself to do so. Pay no attention to anything between the main ideas; skip everything except the main ideas, themselves.

Try skimming for main ideas in the selection below. Allow yourself just 1½ minutes. Stop skimming when your minute and a half is up, whether or not you have finished skimming the article. Then do Activity 2, which is based on main ideas only.

Selection 2

Elliot Lake, Uranium Capital or Ghost Town?

Were a motorist to turn north off the Trans-Canada Highway as it rounds the northern shore of Lake Huron, he would, after a few score miles, come upon one of those anomalies that modern industrial management sometimes creates—a model town in the wilderness. Spread out in a huge clearing, its residential streets conforming to the contours of the rough, rocky terrain, is Elliot Lake, a modern, well-planned town that, in 1957, had about 12,500 residents. Dense timber, standing far back, surrounds a town of twenty miles of streets, most of them paved. That the demands for modern day comfort, convenience and health were considered is evidenced by the well-planned commercial section, the one-hundred bed hospital, the community centre, the swimming pool, the eight schools and the several churches. Imaginative planning of the residential areas show esthetic and practical results. The "neighborhoods," separated by formations of rocky ridges or by clumps of trees, are natural sections dictated by topography. Each was planned to contain its own shopping centre and school. The single and multiple dwellings are well designed and the gridiron appearance sometimes prevalent in new housing areas was avoided by clever use of natural land contours and comparably spacious lots. Two thoughts come to mind: this was Elliot Lake the boom town, the centre of the richest uranium field in the world; this is a ghost town with population dwindled to 3000. Hundreds of new houses stand empty, school rooms are closed, churches are sparsely attended, community centre facilities are only partially used, many businesses have been forced to close. Facts and figures suggest that Elliot Lake is a ghost town. The townspeople hope against hope that their once prosperous city will cling to its thin thread of life and strengthen it until full-scale mining is resumed and Elliot Lake once more becomes a flourishing city.

The Mining Boom

Elliot Lake owes its existence to a fantastic mining boom that followed the discovery, by Fran Joubin in 1953, of the richest uranium field in the world. The field is so rich that some claim it has the potential power to change the living conditions of the whole world—to replace poverty and want with world-wide prosperity. When news of the fabulous find spread, a stampede developed. Stakers swarmed over the area. Eight thousand claims were staked. Drilling was started to assess the amount of uranium ore which might be produced and to determine the number and location of mines. The findings were spectacular. The price of shares skyrocketed. Fortunes were made. People who invested small savings increased them a thousandfold.

There was at this time a frantic demand, engendered by fear of war, for uranium. The Canadian Government, through its agent the Eldorado Mining and Refining Company, guaranteed to buy more than a billion dollars worth of uranium to be delivered by April 1, 1963. It contracted with foreign countries to resell to them on a non-profit basis. Incredible amounts of money were spent to get mining under way to meet the deadline and reap the unbelievable monetary harvest. In 1956 and 1957 alone, $300,000,000 were spent.

The first mine to begin production was the Pronto, the smallest of all the Elliot Lake mines, yet surpassed by only two on the whole continent of North America, one in New Mexico and one in Utah. Its contract called for first delivery by January, 1956, and production started in May, 1955. Eleven mines were soon producing. One was Consolidated Denison, the largest uranium mine in the world. It has

---

esthetic (ĕs.thĕt′ĭk): having to do with the beautiful, artistic.
monetary (mŏn′ē tĕr′ē): relating to money.
amenity (à mĕn′ĭ tē): features which aid material comfort or convenience.

reserves twice that of all the uranium mines in the United States.

Origin of Elliot Lake

In order to work at the maximum capacity required for meeting their contracts, it was imperative that the mines have a very large and experienced work force. To attract and retain such a force, it was necessary to provide excellent living conditions. Executives of the mines, with aid from the Ontario provincial government, set to work. A site was chosen along the southeastern shore of Elliot Lake and the name of the city-to-be, decided upon. Guided and controlled by expert planning, Elliot Lake, the uranium capital of the world, rose rapidly. By 1958 there was a hospital, a community centre, eight schools, thousands of residences, three hotels, theatres, several banks, churches and many places of business. All the amenities of modern, pleasant living had been provided for the 25,000 people of the city and its environs.

The Boom Declines

In November, 1959, the United States gave notice that it would not purchase more uranium from Canada after its contracts were completed in 1962 and 1963. Sales to other countries did not appear likely. Elliot Lake mines consolidated to four and cut back production. The population dropped to 7,000. Only one mine, the Rio Tino, programmed to continue some production until 1966. The number of employees dropped to 3,500. Houses and schools emptied. Some businesses folded. Elliot Lake appeared to be a ghost town.

Elliot Lake a Ghost Town?

Experts believe that by 1970 uranium for civilian use will be in great demand. Steps have been taken to try to sustain the uranium mining industry until then. The Canadian Government arranged for a stretch-out of uranium deliveries to 1966 and research was instituted to find non-nuclear uses for uranium. A new uranium-steel alloy has resulted but is not yet economically useful. Meanwhile, Elliot Lake hopes to weather the slump by means of an alternative industry. Extensive advertising has brought tourists, and a low cost housing scheme to attract retired couples and salesmen has met with some success. Businessmen are confident that Elliot Lake will survive to become once more the Uranium Capital of the World.

ACTIVITY 2

What did you find out in 1½ minutes?

1. Why are travellers surprised at first sight of Elliot Lake? ____________________

____

2. What is there about Elliot Lake that suggests it may be a ghost town? ____________________

____

3. What caused the mining boom in the Elliot Lake district? ____________________

____

4. Why was it necessary to get mines producing quickly?

____

____

5. What necessitated the building of a model town in the uranium field? ____________________

____

6. List three facts that show that by 1958 there had been rapid growth in construction and population ____________________

____

7. Why did the boom decline? ____________________

____

8. List four steps taken for Elliot Lake's survival until large-scale mining is resumed ____________________

____

____

Comprehension score: _____

SKIMMING WITH THE USE OF KEY WORDS

Not all words in a sentence have the same value in conveying meanings. Some words are very important; others we could well do without.

A telegram is a good example of the use of key words. If the sender of a telegram didn't pay in terms of the number of words in his message, he would probably write complete sentences like this:

> I PLAN TO LEAVE NEW YORK ON UNITED AIRLINES AT 8:30 A.M. ON WEDNESDAY, MARCH 14. THIS PLANE ARRIVES IN LOS ANGELES AT 10:30 P.M. ON THE SAME DATE. PLEASE MEET ME AT THE AIRPORT.

This telegram counts up to 35 words, several of which are unnecessary. The really important information which the sender of the above telegram wishes to convey to the receiver in Los Angeles is the date and time of his arrival, the name of the airline with which he is traveling, and a request to be met. Since he is paying for the number of words, he sends a 12-word message which accomplishes his purpose.

> ARRIVING LOS ANGELES 10:30 P.M. MARCH 14. UNITED AIRLINES. PLEASE MEET ME.

When he is skimming, the skillful reader reads all sentences in print as if they were telegrams. Unconsciously he seizes the words that have heavy meaning values and notices the others scarcely or not at all. This is one of the techniques most frequently used by exceptional skimmers.

In the selection below, words of strong meaning value have been left in and words of weak meaning value have been omitted. Skim through this selection and see how much you can get just from the words that have strong meaning value.

Flash your eyes across the page as fast as you can. Allow yourself one minute for the whole selection. Stop at the end of one minute whether you have finished or not. Then take the test under Activity 3.

Selection 3

Hubert, the Hippo [2]

Any animal expert knows . . . hippos . . . home-loving creatures . . . never stray more than . . . few miles . . . home. Yet . . . 1919, incredulous natives saw . . . hippopotamus . . . . . . cane field hundreds . . . miles south from . . . . . . waters . . . Zululand . . . . . . presumably he should have been.

. . . . . . morning, Hubert . . . (. . . got to be called), . . . gone . . . . believed . . . . . . headed north . . . home. Soon . . . . sighted, heading south.

Newspapers . . . . . . South Africa . . . . . . story when Hubert went . . . field . . . cabbages. Nobody . . . . had ever seen . . . . . . hippopotamus before, much less one . . . ate cabbages. . . . 6,000-pound . . . went . . . one cabbage field . . . another; . . . . . . southward. Months later . . . appeared . . . . . . lake outside . . . . . . city . . . Durban, . . . hundreds . . . motorists drove . . . . . . see him.

Hubert . . . . liked people. But . . . hunters from . . . Johannesburg Zoo . . . . . . , . . . violently resisted . . . . Natal Provincial Council . . . decreed Hubert . . . . . . , ward . . . . . . Province. . . . . . . no one dared . . . molest . . . huge animal, ...

As if . . . knew . . . . . . free run . . . country, Hubert headed . . . Durban. . . . traffic stopped . . . . lumbered . . . . . . main street, poking . . . head . . . doorways.

On southward . . . went, making . . . . . . point . . . go through villages rather than around . . . . Awed natives treated . . . . some sort . . . god. Hubert did . . . . . . display . . . . . . interest . . . religion . . . . . . shouldered his way . . . . . . Buddhist temple, blundered . . . . . . Trappist monastery, ... ploughed . . . . . . ceremonial dance.

Hubert once disappeared . . . weeks, . . . those who knew . . . hippopotamus said . . . . Hubert . . . . . . home . . . Zululand. Then . . . . . . walked . . . . . . village . . . hundred miles . . . farther south.

What strange call lured . . . . . . southward? No one . . . found out. . . . one night, two . . . . . . half years later, ... shot . . . death. No one knows . . . for. Hubert might find a place . . . himself as one . . . . . . most remarkable rugged individualists . . . . . . animal kingdom.

ACTIVITY 3

How much did you get in one minute? Write your answers.

1. What kind of animals are hippopotami? ________
2. Where did incredulous natives see a hippopotamus one morning? ________
3. In what direction was Hubert traveling when he was next sighted? ________
4. Into what kind of fields did he next travel? ________
5. A few months later he appeared at a lake near a certain city. What was that city? ________
6. Whom did Hubert resist? ________
7. What did the Natal Provincial Council decree? ________
8. After the decree Hubert visited a certain city. What did he do in this city? ________
9. In what ways did Hubert show an interest in religion? ________
10. What happened to Hubert finally? ________

Comprehension score: ____

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[2] Millard, Reed, "Hubert, the Hypoed Hippo." Reprinted by permission of Esquire, Inc. © 1958 by Esquire, Inc.

incredulous (ĭn krĕd′ū lŭs): Unbelieving.
Zululand (zōō′lōō lănd′): A native reserve in Africa.

Do you think the owls in this picture are about to attack the dog? No, the dog and the owls all belong to the same family. All of them were pets of a boy in Saskatoon, Saskatchewan. You are soon to read about the interesting things that these pets did.

SKIMMING FOR GENERAL IMPRESSIONS

When you have occasion to read light material for general impressions, you will find that skimming it for key words is a very effective way to gather the general ideas in a hurry. In such cases, sweep over the page at your highest rate, paying attention to key words only. Disregard entirely the words of low meaning value.

The selection below is what we call light reading. Skim through this selection, forcing yourself to your highest speed, momentarily grasping key words as you race along over the page. Disregard the words of lesser meaning value as completely as if they didn't appear on the page at all.

Allow yourself one minute and 45 seconds to gather the main impressions in this selection. Stop when this time is up whether or not you have finished. Check your comprehension by doing Activity 4.

Selection 4

The Owls in Our House [3]

In my youth I had a peculiar affinity for unusual pets. This, at any rate, is how my father and mother explained my acquisition of a brace of rattlesnakes, a coyote, a full-powered skunk, and a covey of 14 ungainly bats. When the owls arrived, however, my parents welcomed them almost with affection, for owls were, they thought, inactive, dignified, and not very stimulating beasts. My parents were wrong. The two great horned owls which joined my family in the spring of 1932, at Saskatoon, Saskatchewan, were probably the *most* unusual pets I ever had.

The owls were only six weeks old when I brought them home, and my parents, who had never seen a full-grown horned owl, had no idea how impressive they could be. I preserved a discreet silence on the subject. When Mother vetoed my plan for keeping them in my bedroom, my father solved the housing problem by helping me build a chicken-wire enclosure in our back yard. This was used only a few months, for the owls showed no disposition to stray. In fact, they seemed overwhelmingly anxious to avoid the uncertainties of freedom.

Once I accidentally left them alone after a romp in the yard, and they, concluding that they had been abandoned, staged a determined retreat into our house. Under the raking impact of their talons, screen doors melted as if they had been tissue paper. Both owls came bursting in, breathing hard and looking apprehensively over their shoulders at the wide outer world.

The two fledglings were utterly unlike in character. Wol, the dominant member, was a calmly arrogant extrovert. Weeps, on the other hand, was a nervous bird, plagued by nebulous fears.

When three months old and nearly full-grown, Wol stood two feet high and had a four-foot wing-spread. His talons were an inch long and needle-sharp, and, combined with his hooked beak, they gave him a formidable armament.

One summer night he was in a huff as a result of a disagreement he had had with our dog, Mutt. He refused to come down from a high perch in a poplar tree to go to bed in the cage. Knowing something of the ferocity of the night-stalking cats of Saskatoon, I slept lightly.

It was just breaking dawn when I heard the sound of a muffled flurry in the yard. I rushed out. To my horror, the poplar trees were empty. I raced around the house. Wol was sitting quietly on our back steps, his body hunched up in an attitude of sleepy comfort. It was not until I came close that I saw the cat. Wol was sitting on it. His feathers were fluffed out in the manner of sleeping birds, so that only the cat's head and tail were visible, but I could see that it was beyond mortal aid. That cat was the first of many which fell into the fatal error of regarding Wol as just another kind of chicken, and therefore easy meat.

---

[3] From *The Dog Who Wouldn't Be*, by Farley Mowat, by permission of Little, Brown & Co. © 1957 by The Curtis Publishing Co. Condensed in *The Reader's Digest*, September 1957.

extrovert (ĕks′trô vûrt): One directing interests outward.
nebulous (nĕb′ů lŭs): Hazy, cloudy.
querulous (kwer′ů lŭs): Apt to find fault.
ruminant (ro͞o′mĭ nănt): Chewing the cud.

Nor were dogs much more of a problem. One day a Shepherd caught Wol on the ground and went for him. It was a surprisingly one-sided battle. Wol lost a handful of feathers, but the dog went under the care of a veterinarian and, for weeks afterward, he would cross the street to avoid passing too close to Wol.

The owls had a preference in seating arrangements —the back of the rumble seat, where, as soon as the car was in motion, they would extend their great pinions as if in flight. If they slanted the leading edges downward, the rush of air would force them into a squatting position. But when they tipped the leading edges upward they would be lifted clean off the seat, and only the grip of their talons would keep them from soaring aloft like kites. They learned to alternate. While one was going down, the other would be coming up in rhythmic frequency. Intoxicated by the rush of air, they would often break into song and my father, caught up in the spirit of the thing, would punctuate their hootings with blasts of the horn.

Mutt also rode in the rumble seat. He had delicate eyes, and to protect them from prairie dust, my father had fitted him with motorcycle goggles. Thus the complete picture of our car on the highways included a vignette of Mutt sitting stolidly between two bobbing owls, staring straight ahead through his goggles.

This time we had gone only 50 miles when a downpour hit us. The Model A began to sputter as we entered one of those one-garage villages on the western plains. The garage was a frame shanty with a gaping doorway, and my father drove straight inside.

In the gloomy interior, the proprietor was crouching over an old inner tube. When he had finished communing with it, he slowly began to stand up to our level. I can see his face now as clearly as I saw it then. It was wearing a look of querulous animosity, but this changed as the eyes focused on the car and its passengers. The jaws began to move as they might in a ruminant—though they were chewing nothing.

It was then that Wol chose to spread his wings and shake himself. The shake increased his apparent size threefold as his wet feathers came unstuck. When he concluded the performance by loudly clacking his great beak, by flipping the membranes sickeningly over his yellow eyes, and by giving throaty voice to his relief, the effect was devastating. The garageman's face registered a look of desperate amazement.

At this moment Mutt thrust his goggled head over the edge of the car, peering in his shortsighted manner into the garageman's face. The man had had enough. He moaned low in his throat, dashed out of the garage, and ran down the muddy street.

For three years our relationship with Wol and Weeps was a warm and rewarding one. But, as it must be with most wild things which have been taken from the wilderness, the final fate of the two owls was tragic. When we left the West we made arrangements with an acquaintance in Saskatoon to care for our old friends. For almost a year we had good reports, but then poor Weeps somehow managed to strangle himself in the wire netting of his cage. Only a few weeks later Wol tore the mesh apart and vanished.

I had tagged both owls with aluminum bands supplied by the U. S. Biological Survey. One day I received a letter from the Survey informing me that a great horned owl, banded by me, had been shot and killed. The address of the man who had killed the owl was the address of the house on Crescent Avenue where we had once lived with Wol and Weeps.

ACTIVITY 4

How much did you get in one minute and 45 seconds?

1. Did you get the impression that the owls were rather ordinary pets or unusual pets? ____________
2. What did the owls do one day after the writer had accidentally left them alone in the yard? ____________
3. What happened to the cat one night when Wol roosted in the poplar tree? ____________
4. Who was under the care of a veterinarian after Wol and the dog had a battle? ____________
5. What would the owls do in rhythmic frequency while riding on the rumble seat? ____________
6. What did Mutt do as he rode along? ____________
7. What was Wol's first act which caused the man in the garage to show amazement? ____________
8. What did the garageman do when Mutt peered into his face? ____________
9. What finally happened to Weeps? ____________
10. What finally happened to Wol? ____________

Comprehension score: _____

CHAPTER 9

HOW TO PRONOUNCE AND UNDERSTAND UNFAMILIAR WORDS

Two of the most basic skills needed in becoming an excellent reader are: the ability to pronounce new words correctly, and the ability to understand the meaning of words when modified by different prefixes and suffixes or when used in different contexts. Your dictionary, of course, is your final authority on these matters. It follows that you need to develop a high degree of skill in using a dictionary.

A person cannot be *too* dependent on the dictionary, however, and still cover a quantity of reading material in a short time. You should have at your command methods of attacking pronunciations and meanings independently and rapidly. Save the dictionary for only those needs that you cannot meet readily on your own. Words that do not yield to ordinary methods of attack, or of which you are not sure, should be checked, underlined, or written on cards and carefully studied in the dictionary. If you are skillful in using word attack techniques, however, you should be able to recognize by far the great majority of words as you read rapidly or even skim over the pages.

REVIEW OF WORD ATTACK TECHNIQUES

You have had all of the word attack techniques in preceding grades. As a part of your reading improvement program, however, it is well to refresh your memory in regard to these word recognition skills and to have some practice in applying them at your level. To that end this chapter is provided.

The word recognition skills which you should be able to use with ease are: identifying sounds of letters and letter combinations; knowing how to divide words into syllables; recognizing words from context; recognizing many prefixes and suffixes; making the best use of your dictionary in connection with all of these items. You will now be given practice designed to increase your ability in using each of the techniques mentioned above.

Identifying Vowel Sounds

You learned in elementary grades that we have a few guides to help us in telling when a vowel is long, short, or silent:

1. When a one-syllable word contains two vowels, one of which is the final e, the first vowel is usually long and the final e is silent.
2. When there is only one vowel in a word and that vowel does not come at the end of the word, the vowel is usually short.
3. When two vowels come together in a one-syllable word, the first vowel is usually long and the second vowel is usually silent.
4. When a vowel is followed by r, it usually has a sound different from the long or short sound.

If these guides do not apply, however, we have to depend upon one of two other means in deciding upon the sound of a vowel:

1. Fitting the word into context. We often know the pronunciation of words when heard or used verbally, but do not recognize these words in print. One way to check the pronunciation of an unrecognized word in print is to read the sentence in which it appears to see if the meaning of a word which you know verbally fits into the context to make sense. This often proves to be a useful technique, but it is not always reliable.
2. The most dependable procedure is, of course, to look up the word in the dictionary and to interpret the diacritical markings above the vowels.

In interpreting the sounds of the vowels from diacritical markings in the dictionary, you should instantly recognize by sight the mark for long vowels (a short bar as in *spāce, ōld*) and the mark for short vowels (a brief curved line as in *ăct, trĭp*).

Diacritical marks for vowels followed by r vary from vowel to vowel but still are easy to remember. You probably recall that the r usually gives a the sound it has in *färm*. This sound is indicated by two dots when there is no other vowel in the word or syllable. It usually gives a the sound that it has in *care* when there is another vowel in the word or syllable, as in *fare, air, bear*. This sound is indicated with this kind of mark: *câre*.

The vowel e has two different sounds when followed by an r: ę̄ in *hę̄re*, and ẽ in *makẽr*. One-syllable words having the sound of e as in *makẽr* are usually respelled with u in the dictionary: *per* (pûr), *her* (hûr).

The sound of i is changed by r, but there is no special marking for this sound. Words or syllables containing i followed by r are respelled in the dictionary with u: *bird* (bûrd).

The vowels o and u have a special mark when their sounds are changed by r, as in *côrd, cûr*.

No doubt you can recall the sound that each of the above marks indicates when you look up words, particularly when you note that an r follows the vowel.

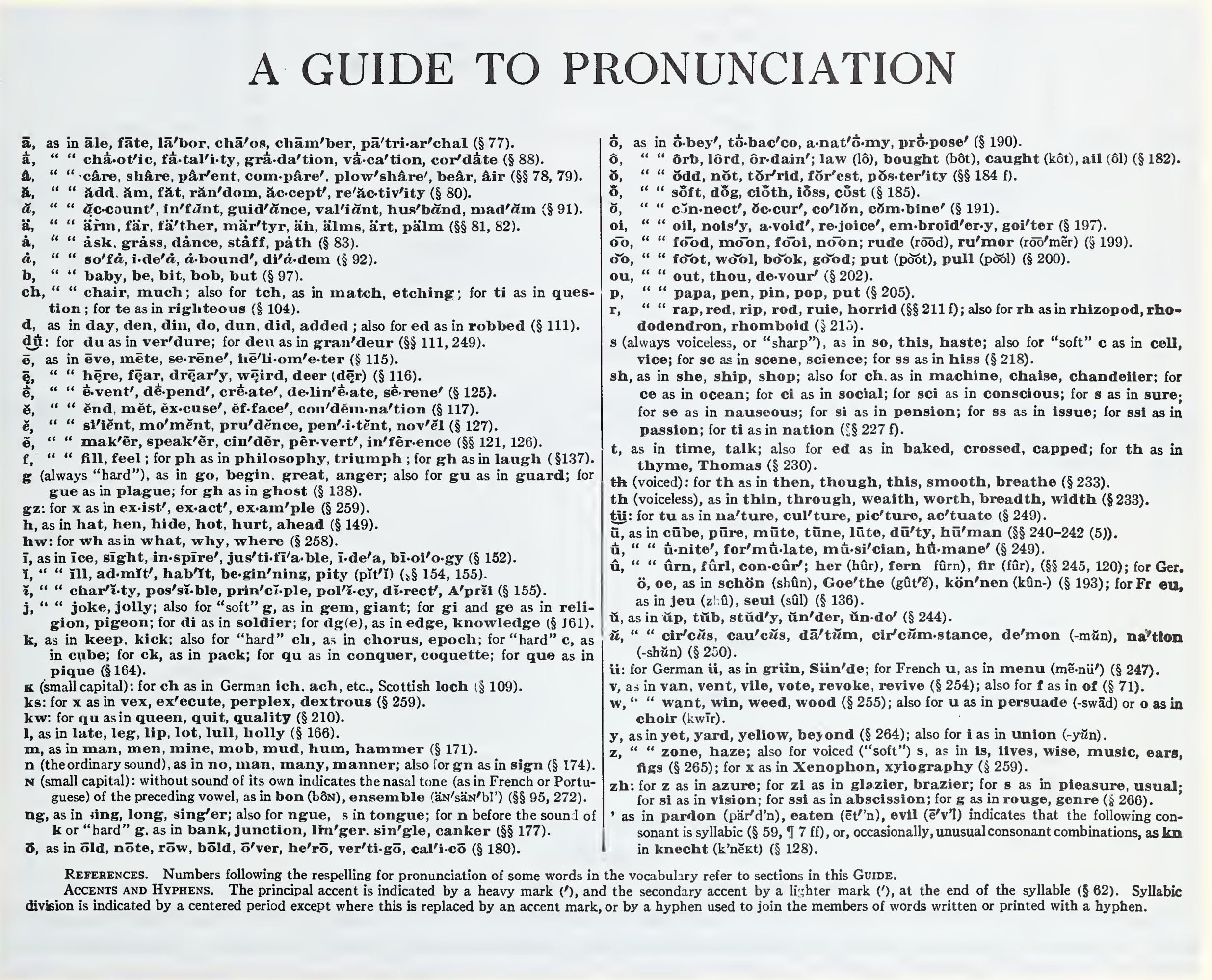
Markings for the schwa sound usually impress themselves upon us, without any special effort on our part to remember them.

The vowels a, e, i, o and u all have one soft short sound which is the same. This sound is like a very soft, short u regardless of which of the vowels is used. It usually occurs at or near the end of a word. In the case of a, however, it sometimes comes at the beginning, as in *abound.* It never appears in an accented syllable.

In Webster's dictionary the letter having this sound is always printed in italics. It is marked with a *breve* (˘) except in the case of the a, where it usually has a dot above (·). Examples of words having the schwa sound are: diphtheri*ȧ*, *ȧ*head, dilig*ĕ*nt, pol*ĭ*cy, c*ŏ*rrect, chor*ŭ*s.

If you are not familiar with the markings of the schwa sound, and do not use a Webster's dictionary, look up the markings of this sound in the dictionary that you do use.

Using a Guide to Pronunciation [1]



A GUIDE TO PRONUNCIATION

ā, as in **āle, fāte, lā′bor, chā′os, chām′ber, pā′tri·ar′chal** (§ 77).
ā̍, " " **chā̍·ot′ic, fā̍·tal′i·ty, grā̍·da′tion, vā̍·ca′tion, cor′dā̍te** (§ 88).
â, " " **câre, shâre, pâr′ent, com·pâre′, plow′shâre′, beâr, âir** (§§ 78, 79).
ă, " " **ădd, ăm, făt, răn′dom, ăc·cept′, re′ăc·tiv′ity** (§ 80).
***ă*,** " " **ạc·count′, in′f*ă*nt, guid′*ă*nce, val′i*ă*nt, hus′b*ă*nd, mad′*ă*m** (§ 91).
ä, " " **ärm, fär, fä′ther, mär′tyr, äh, älms, ärt, pälm** (§§ 81, 82).
ȧ, " " **ȧsk, grȧss, dȧnce, stȧff, pȧth** (§ 83).
***ȧ*,** " " **so′f*ȧ*, i·de′*ȧ*, *ȧ*·bound′, di′*ȧ*·dem** (§ 92).
b, " " **baby, be, bit, bob, but** (§ 97).
ch, " " **chair, much**; also for **tch**, as in **match, etching**; for **ti** as in **question**; for **te** as in **righteous** (§ 104).
d, as in **day, den, din, do, dun, did, added**; also for **ed** as in **robbed** (§ 111).
dū̮: for **du** as in **ver′dure**; for **deu** as in **gran′deur** (§§ 111, 249).
ē, as in **ēve, mēte, se·rēne′, hē′li·om′e·ter** (§ 115).
ę̄, " " **hę̄re, fę̄ar, drę̄ar′y, wę̄ird, deer** (**dę̄r**) (§ 116).
ē̍, " " **ē̍·vent′, dē̍·pend′, crē̍·ate′, de·lin′ē̍·ate, sē̍·rene′** (§ 125).
ĕ, " " **ĕnd, mĕt, ĕx·cuse′, ĕf·face′, con′dĕm·na′tion** (§ 117).
***ĕ*,** " " **si′l*ĕ*nt, mo′m*ĕ*nt, pru′d*ĕ*nce, pen′·i·t*ĕ*nt, nov′*ĕ*l** (§ 127).
ẽ, " " **mak′ẽr, speak′ẽr, cin′dẽr, pẽr·vert′, in′fẽr·ence** (§§ 121, 126).
f, " " **fill, feel**; for **ph** as in **philosophy, triumph**; for **gh** as in **laugh** (§137).
g (always "hard"), as in **go, begin, great, anger**; also for **gu** as in **guard**; for **gue** as in **plague**; for **gh** as in **ghost** (§ 138).
gz: for **x** as in **ex·ist′, ex·act′, ex·am′ple** (§ 259).
h, as in **hat, hen, hide, hot, hurt, ahead** (§ 149).
hw: for **wh** as in **what, why, where** (§ 258).
ī, as in **īce, sīght, in·spīre′, jus′ti·fī′a·ble, ī·de′a, bī·ol′o·gy** (§ 152).
ĭ, " " **ĭll, ad·mĭt′, hab′ĭt, be·gin′ning, pity** (pĭt′ĭ) (§§ 154, 155).
***ĭ*,** " " **char′*ĭ*·ty, pos′s*ĭ*·ble, prin′c*ĭ*·ple, pol′*ĭ*·cy, d*ĭ*·rect′, A′pr*ĭ*l** (§ 155).
j, " " **joke, jolly**; also for "soft" **g**, as in **gem, giant**; for **gi** and **ge** as in **religion, pigeon**; for **di** as in **soldier**; for **dg**(**e**), as in **edge, knowledge** (§ 161).
k, as in **keep, kick**; also for "hard" **ch**, as in **chorus, epoch**; for "hard" **c**, as in **cụbe**; for **ck**, as in **pack**; for **qu** as in **conquer, coquette**; for **que** as in **pique** (§ 164).
ᴋ (small capital): for **ch** as in German **ich, ach**, etc., Scottish **loch** (§ 109).
ks: for **x** as in **vex, ex′ecute, perplex, dextrous** (§ 259).
kw: for **qu** as in **queen, quit, quality** (§ 210).
l, as in **late, leg, lip, lot, lull, holly** (§ 166).
m, as in **man, men, mine, mob, mud, hum, hammer** (§ 171).
n (the ordinary sound), as in **no, man, many, manner**; also for **gn** as in **sign** (§ 174).
ɴ (small capital): without sound of its own indicates the nasal tone (as in French or Portuguese) of the preceding vowel, as in **bon** (bôɴ), **ensemble** (äɴ′säɴ′bl′) (§§ 95, 272).
ng, as in **sing, long, sing′er**; also for **ngue,** as in **tongue**; for **n** before the sound of **k** or "hard" **g**, as in **bank, junction, lin′ger, sin′gle, canker** (§§ 177).
ō, as in **ōld, nōte, rōw, bōld, ō′ver, he′rō, ver′ti·gō, cal′i·cō** (§ 180).
ō̍, as in **ō̍·bey′, tō̍·bac′co, a·nat′ō̍·my, prō̍·pose′** (§ 190).
ô, " " **ôrb, lôrd, ôr·dain′**; **law** (lô), **bought** (bôt), **caught** (kôt), **all** (ôl) (§ 182).
ŏ, " " **ŏdd, nŏt, tŏr′rid, fŏr′est, pŏs·ter′ity** (§§ 184 f).
ŏ̄, " " **sŏ̄ft, dŏ̄g, clŏ̄th, lŏ̄ss, cŏ̄st** (§ 185).
***ŏ*,** " " **c*ŏ*n·nect′, *ŏ*c·cur′, co′l*ŏ*n, c*ŏ*m·bine′** (§ 191).
oi, " " **oil, nois′y, a·void′, re·joice′, em·broid′er·y, goi′ter** (§ 197).
o͞o, " " **fo͞od, mo͞on, fo͞ol, no͞on**; **rude** (ro͞od), **ru′mor** (ro͞o′mẽr) (§ 199).
o͝o, " " **fo͝ot, wo͝ol, bo͝ok, go͝od**; **put** (po͝ot), **pull** (po͝ol) (§ 200).
ou, " " **out, thou, de·vour′** (§ 202).
p, " " **papa, pen, pin, pop, put** (§ 205).
r, " " **rap, red, rip, rod, rule, horrid** (§§ 211 f); also for **rh** as in **rhizopod, rhododendron, rhomboid** (§ 215).
s (always voiceless, or "sharp"), as in **so, this, haste**; also for "soft" **c** as in **cell, vice**; for **sc** as in **scene, science**; for **ss** as in **hiss** (§ 218).
sh, as in **she, ship, shop**; also for **ch** as in **machine, chaise, chandelier**; for **ce** as in **ocean**; for **ci** as in **social**; for **sci** as in **conscious**; for **s** as in **sure**; for **se** as in **nauseous**; for **si** as in **pension**; for **ss** as in **issue**; for **ssi** as in **passion**; for **ti** as in **nation** (§§ 227 f).
t, as in **time, talk**; also for **ed** as in **baked, crossed, capped**; for **th** as in **thyme, Thomas** (§ 230).
t͟h (voiced): for **th** as in **then, though, this, smooth, breathe** (§ 233).
th (voiceless), as in **thin, through, wealth, worth, breadth, width** (§ 233).
tū̮: for **tu** as in **na′ture, cul′ture, pic′ture, ac′tuate** (§ 249).
ū, as in **cūbe, pūre, mūte, tūne, lūte, dū′ty, hū′man** (§§ 240–242 (5)).
ū̍, " " **ū̍·nite′, for′mū̍·late, mū̍·si′cian, hū̍·mane′** (§ 249).
û, " " **ûrn, fûrl, con·cûr′**; **her** (hûr), **fern** (fûrn), **fir** (fûr), (§§ 245, 120); for **Ger. ö, oe,** as in **schön** (shûn), **Goe′the** (gût′*ĕ*), **kön′nen** (kûn-) (§ 193); for **Fr eu,** as in **jeu** (zhû), **seul** (sûl) (§ 136).
ŭ, as in **ŭp, tŭb, stŭd′y, ŭn′der, ŭn·do′** (§ 244).
***ŭ*,** " " **cir′c*ŭ*s, cau′c*ŭ*s, dā′t*ŭ*m, cir′c*ŭ*m·stance, de′mon** (-m*ŭ*n), **na′tion** (-sh*ŭ*n) (§ 250).
ü: for German **ü**, as in **grün, Sün′de**; for French **u**, as in **menu** (mẽ·nü′) (§ 247).
v, as in **van, vent, vile, vote, revoke, revive** (§ 254); also for **f** as in **of** (§ 71).
w, " " **want, win, weed, wood** (§ 255); also for **u** as in **persuade** (-swād) or **o** as in **choir** (kwīr).
y, as in **yet, yard, yellow, beyond** (§ 264); also for **i** as in **union** (-y*ŭ*n).
z, " " **zone, haze**; also for voiced ("soft") **s**, as in **is, lives, wise, music, ears, figs** (§ 265); for **x** as in **Xenophon, xylography** (§ 259).
zh: for **z** as in **azure**; for **zi** as in **glazier, brazier**; for **s** as in **pleasure, usual**; for **si** as in **vision**; for **ssi** as in **abscission**; for **g** as in **rouge, genre** (§ 266).
’ as in **pardon** (pär′d’n), **eaten** (ēt′’n), **evil** (ē′v’l) indicates that the following consonant is syllabic (§ 59, ¶ 7 ff), or, occasionally, unusual consonant combinations, as **kn** in **knecht** (k’nĕᴋt) (§ 128).

References. Numbers following the respelling for pronunciation of some words in the vocabulary refer to sections in this Guide.

Accents and Hyphens. The principal accent is indicated by a heavy mark (′), and the secondary accent by a lighter mark (′), at the end of the syllable (§ 62). Syllabic division is indicated by a centered period except where this is replaced by an accent mark, or by a hyphen used to join the members of words written or printed with a hyphen.

The above "Guide to Pronunciation" is provided for your reference in doing Activities 1 to 4. In case you use a dictionary that employs a marking system different from Webster's, then use the pronunciation guide in that dictionary as a reference, or revise the pronunciation guide on this page to agree with your dictionary.

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[1] "A Guide to Pronunciation." By permission. From *Webster's New International Dictionary,* Second Edition, copyright 1934, 1939, 1945, 1950, 1953, 1954, 1957, by G. & C. Merriam Co.

ACTIVITY 1

Identify the sound of each *underlined* vowel in the words below, by marking it with the correct diacritical mark. See if you can mark the following sounds without referring to the table:

1. Long and short vowel sounds.
2. Sounds of a vowel followed by r.
3. Schwa sounds.

You may refer to the table if necessary in marking the other sounds.

It may be necessary in some cases to rewrite a word in order to show its sound — bird (bûrd). In such cases write the respelled word to the right of the word in the list, and mark it.

In case of schwa sounds, after marking each one of them place an s above the letter which has this sound.

1. borax
2. label
3. ferns
4. detail
5. weevils
6. fuel
7. industry
8. fertile
9. adorn
10. topic
11. filter
12. wheat
13. grasp
14. cluster
15. section
16. blood
17. result
18. crystal
19. Arabia
20. student
21. divider
22. cypress
23. slight
24. share
25. harmful
26. loft
27. tobacco
28. spurn
29. human
30. affinity
31. formulize
32. task
33. shook
34. shirk
35. government
36. union
37. microbe
38. barber
39. athlete
40. talons

ACTIVITY 2

Vowels are marked in the first column of words below as they are marked in the dictionary. To the right of each of these words are three words. Find the word in this list which has a vowel in it with the same sound as the vowel marked in the word in the first column. Underline this word.

1. căbin	a. aware	b. sharp	c. bracket
2. stŭbble	a. busy	b. secure	c. scuffle
3. compâre	a. scatter	b. flare	c. cartoon
4. mōlars	a. tropical	b. hold	c. collie
5. retûrn	a. spruce	b. surf	c. construct
6. mīgrate	a. simple	b. imitation	c. spider
7. ôrder	a. suppose	b. morbid	c. volume
8. ūsual	a. pulp	b. produce	c. jungle
9. nĕstle	a. bear	b. steam	c. suggest
10. remärk	a. native	b. sharp	c. surface

ACTIVITY 3

The vowels in the words in the left-hand column below have not been marked with diacritical marks, but there is a circle around one vowel or double vowel in each of these words. Match the sound of this vowel with the correct marking of the vowel in one of the words to the right. Underline the word in which the vowel has been marked correctly.

1. mammoth	a. māmmoth	b. mămmoth	c. mämmoth
2. signal	a. signâl	b. sign*ă*l	c. sign*ȧ*l
3. subject	a. sūbject	b. sŭbject	c. sûbject
4. coffee	a. cŏffee	b. côffee	c. cōffee
5. thicket	a. thīcket	b. th*ĭ*cket	c. thĭcket
6. roost	a. roöst	b. ro͞ost	c. ro͝ost

7. storage	a. stôrage	b. stōrage	c. stŏrage
8. splinter	a. splīnter	b. splĭnter	c. spl*ĭ*nter
9. pencil	a. pēncil	b. pẽncil	c. pĕncil
10. creature	a. crēature	b. crēature	c. crĕature
11. arched	a. ârched	b. ärched	c. ārched
12. churned	a. chūrned	b. chŭrned	c. chûrned
13. idol	a. ĭdol	b. īdol	c. *ĭ*dol
14. normal	a. nōrmal	b. nôrmal	c. nŏrmal
15. settlement	a. settlemĕnt	b. settlemēnt	c. settlem*ĕ*nt
16. design	a. desīgn	b. desĭgn	c. des*ĭ*gn
17. apricots	a. äpricots	b. āpricots	c. âpricots
18. copper	a. côpper	b. cōpper	c. cŏpper
19. wooden	a. wōōden	b. wŏŏden	c. wööden
20. fumes	a. fûmes	b. fŭmes	c. fūmes

ACTIVITY 4

Pronounce each of these words, rewrite it, and mark all of the vowels in the word that you have written. You may refer to the "Guide to Pronunciation" for help in those cases in which you are not sure of a sound or a marking. If a vowel is silent, cross it out — mūl~~e~~. Place an s above each of the schwa sounds.

1. virus ______________________________

2. distant ______________________________

3. crescent ______________________________

4. trait ______________________________

5. affinity ______________________________

6. constant ______________________________

7. purge ______________________________

8. basket ______________________________

9. farmer ______________________________

10. pool ______________________________

11. pavement ______________________________

12. lumber ______________________________

13. vanish ______________________________

14. idea ______________________________

15. successful ______________________________

16. jerk ______________________________

17. bankrupt ______________________________

18. transform ______________________________

19. collective ______________________________

20. humid ______________________________

DIVIDING WORDS INTO SYLLABLES

In the reading that you do in textbooks, most of the unfamiliar words that you will find are words of three or more syllables. Long words at a glance look difficult. If you can quickly break up such words into syllables, however, you will find that they are usually very easy to pronounce.

You have had work in dividing words into syllables in preceding grades. However, the more adept that you can become in using this skill the more expert will you be in your future reading activities.

A syllable, you will recall, is a part of a word that contains a vowel sound. In most cases a syllable has one or more consonants, too, but it is the vowel sound that makes it a syllable. In some syllables there are two vowels but only one is sounded. In the word *railroad* there are four vowels but only two syllables because only two vowels are sounded. We pronounce the sound of the a in *rail* but i is silent; we pronounce the sound of o in *road* but a is silent. There are two vowels in *home*, but this word has only one syllable because the e is silent and only the o is sounded. Every syllable has *one* vowel sound.

In pronouncing a word you need to say every part that has a vowel sound — that is, every syllable. For this reason the first step in pronouncing a new word is to break it into pronounceable units, or syllables. The activities below will help you to review the guides that are most frequently used in dividing compound words, prefixed and suffixed words, and words containing certain arrangements of consonants and vowels.

Dividing Compound Words

ACTIVITY 1

You will recall that one of the easiest guides to use in dividing words into syllabic units is one that can be applied to compound words. Since there are two words in a compound word, there must necessarily be two pronunciation units. Of course, each of these words may again contain two or more syllables, but at least a starting point in breaking compound words into syllables is to divide between the two words as a whole.

Divide the compound words below by drawing a line between the two words. The first one has been done for you.

1. cut|worm
2. craftsman
3. steamboat
4. outlaw
5. headquarters
6. outspread
7. toothache
8. bedrock
9. broadcast
10. drawback
11. lightweight
12. stairway
13. lifetime
14. shipmate
15. sunlight
16. starlight
17. livestock
18. hailstorm
19. limestone
20. wildlife

Dividing Words Between Double Consonants

ACTIVITY 2

Another guide is that words with double consonants are usually divided between the consonants in writing, but divided just before or after the double consonants in pronunciation. This distinction is important for you to remember in your written work. All too often we find written sentences in which a word at the end of a line is divided just before the two double letters or just after them. Those who are aware of the double-letter guide in syllabication won't make that mistake.

Divide the words below. The first one is done for you.

1. rac|coon
2. dissolve
3. herring
4. pellet
5. twiddle
6. terrace
7. mollusks
8. furrow
9. collide
10. surround
11. approach
12. scatter
13. terror
14. pattern
15. diffuse
16. ripple
17. suffer
18. common
19. pressure
20. squabble
21. brilliant
22. blossom
23. afford
24. lettuce

Dividing When Two Consonants Appear Between Two Vowels

ACTIVITY 3

When two separately sounded consonants appear together between two sounded vowels, words are usually divided between the consonants in both pronunciation and writing. For example, in *compare* there are the two consonants m and p between the two sounded vowels o and a, so we divide between m and p. There are some exceptions to this rule, but it usually holds.

Divide the words below. The first one is done for you.

1. fer|tile
2. purpose
3. suspend
4. conserve
5. object
6. garment
7. condense
8. escape
9. surface
10. furnace
11. lumber
12. somber
13. symbol
14. candid
15. canvas
16. practice
17. certain
18. rumpus
19. fungus
20. version
21. starling
22. border
23. formal
24. concern

Dividing Words When One Consonant Appears Between Two Vowels

ACTIVITY 4

Usually when one consonant appears between two sounded vowels, the word is divided in pronunciation and writing just before the consonant, as: human—hu man. With this principle in mind divide the words below.

1. vi | per
2. credence
3. crater
4. token
5. solar
6. stupid
7. vapor
8. local
9. famous
10. climate
11. crusade
12. deceit
13. marine
14. rival
15. prevent
16. suture
17. nation
18. pilot
19. radar
20. clover
21. finance
22. humid
23. motor
24. music

Note: There are several exceptions to this rule: trop ic, pow er, cab in.

Considering Blends and Speech Sounds

ACTIVITY 5

A blend or speech sound represents just one total sound, even though it is made up of two or more letters. So when two or more consonants come together in a blend or speech sound we do not divide between the letters; we consider the entire group as if it were one letter, for example: in the word *central* we consider tr as if it were one letter because it represents one blended sound. We then divide between n and tr as if we were dividing between two single consonants thus: cen tral.

For review purposes some of the most common blends and speech sounds are listed here: bl, cl, dl, fl, gl, pl, sl; br, cr, dr, fr, gr, pr, tr; sc, sk, sm, sn, sp, st, sw, tw; scr, spr, str, shr, spl, sch, thr; sh, wh, ch, th, ph; qu, ck. Whenever you see one of these groups in a word as a blend, consider it as one letter and apply the principle accordingly. The principle you applied in Activity 3 will be appropriate for some of the words, and the one you applied in Activity 4 will be appropriate for the others. This guide is helpful in both pronunciation and writing.

Write the words below in syllables. The first one is done for you.

1. substance sub stance
2. vibrate ________
3. complex ________
4. machine ________
5. surplus ________
6. handle ________
7. destroy ________
8. supreme ________
9. perspire ________
10. asphalt ________
11. district ________
12. hatred ________
13. describe ________
14. entrance ________
15. withstand ________
16. morphine ________
17. conflict ________
18. neutral ________
19. construct ________
20. hybrid ________
21. crackling ________
22. degree ________
23. comprise ________
24. fortress ________

Considering Prefixes and Suffixes

ACTIVITY 6

A prefix is placed before a word or root to change its meaning and a suffix is placed at the end to change meaning. In attempting to pronounce an unrecognized prefixed or suffixed word, you will find it helpful to divide between the base word and the prefix or suffix. For example, divide *countless* as *count less.*

This guide is very useful in breaking down long words into small, familiar units. For instance, you may divide *inexhaustible* (with two prefixes and a suffix) as *in ex haust ible,* and *nationalistic* (with four suffixes) as *nat ion al ist ic.* After you have done this, you may find that some of the resulting combinations of letters are hard to pronounce in sequence—for instance, the *ist ic* above. Because *is tic* is so much easier to say, we use this form when syllabicating for both pronunciation and writing. Other words will need similar adjustments.

Write each of the words below, separating the prefix or the suffix from the base. If there are two prefixes or suffixes, separate them also. Mark divisions between prefixes or suffixes and the base only, not between pronunciation units.

1. continental ____________
2. overwhelmingly ____________
3. unprofitable ____________
4. wilderness ____________
5. droplet ____________
6. exposure ____________
7. expression ____________
8. recall ____________
9. usefulness ____________
10. amusement ____________
11. display ____________
12. wooden ____________
13. organism ____________
14. remarkable ____________
15. coastal ____________
16. unequal ____________
17. disease ____________
18. Midwestern ____________
19. harmlessness ____________
20. inhalant ____________
21. transform ____________
22. readable ____________
23. impress ____________
24. eastward ____________

Applying All Your Aids to Syllabication

ACTIVITY 7

You have used six different guides which are helpful in dividing words into syllables. Often you will find it necessary to use two or more of these guides in working with the same word. Use as many different guides as necessary in dividing each of the words.

For review and reference state each of the syllabication guides which you have had.

1. ____________
2. ____________
3. ____________
4. ____________
5. ____________
6. ____________

Write each of these words in syllables. Use the spelling guide for double consonants.

1. organization ________________
2. refurbished ________________
3. hippopotamus ________________
4. astigmatism ________________
5. circumstance ________________
6. characteristic ________________
7. inflammation ________________
8. submissiveness ________________
9. incidentally ________________
10. automatically ________________
11. fortification ________________
12. indestructible ________________
13. uninterruptedly ________________
14. lubrication ________________
15. conservationist ________________
16. syllabication ________________
17. recommend ________________
18. incredulous ________________
19. incapable ________________
20. insulator ________________
21. attractive ________________
22. defiance ________________
23. immunization ________________
24. territorial ________________
25. arrangement ________________
26. unsuspectingly ________________
27. comparatively ________________
28. agricultural ________________
29. conflagration ________________
30. contradiction ________________

INTERPRETING WORD MEANINGS

On preceding pages you have had practice in working out the pronunciation of words. It is equally important that you have techniques at your command for use in working out the meanings of words.

Getting Meanings from Context

One technique for ascertaining the meaning of a word is to study the context in which it appears. The words that surround a word in a sentence often determine its meaning. Read the sentences at right to note how the other words in each sentence influence the meaning of the word *range*.

The Morrisons crossed a rugged *range* of mountains.
Mrs. Stone has a new electric *range* in her kitchen.
The cattle were grazing on the *range*.
Madeline's voice has a wide *range*.

You will have practice in finding the meaning of a word in context on page 74.

Noting How Prefixes and Combining Forms Change Meanings

When a prefix or combining form is placed before a root or word, it modifies the meaning. After you have mastered the meanings of prefixes and combining forms, you will have a key to the meanings of many long words. If you don't know the difference between *prefixes* and *combining forms,* consult the dictionary.

Below are some prefixes and combining forms that are important for the understanding of words.

Prefix	*Meaning*	*Example*	*Prefix*	*Meaning*	*Example*
a	not	atypical	anti	against, opposite	anti-waste
ab	away from, off	abnormal	ben, bene, bon	good	benefit
ad	to, toward	adherence, admit	bi	two, twice	bisect
ambi	both	ambidextrous	circum	around	circumference
amphi	around	amphitheater	contra, contro	against	contradiction
ante	before	antenatal	epi	upon, outer	epidermis

Prefix	*Meaning*	*Example*	*Prefix*	*Meaning*	*Example*
ex	out, from	excavate	multi	many	multicellular
hemi	half	hemitrope	per	by, through	perennial
homo	same	homonym	post	after	postdated
hyper	over-, too-	hyperexcitable	pre	before	prediagnosis
inter	between	intermission	pro	for, forward	procedure
micro	small	microcrystal	sub	under	subconscious
mono	one, single	monologue	under	below	underpaid

Matching Prefixes to Definitions

ACTIVITY 1

Write one of the listed prefixes or combining forms before each of the words or roots below to make it mean the same thing as the definition to the right of it.

1. ________ organism: a small, living thing
2. ________ graph: something written on one subject
3. ________ mire: to look up to
4. ________ centric: having one or the same center
5. ________ normal: away from the normal
6. ________ sensitive: excessively sensitive
7. ________ graduate: after graduation
8. ________ equate: equal to
9. ________ Western: against the West
10. ________ natal: before birth
11. ________ factor: one who does good for others
12. ________ dermis: the outer layer of skin
13. ________ session: between sessions
14. ________ color: having many colors
15. ________ cycle: half of a cycle or circle
16. ________ theatre: a level place with hills or tiered seats around it
17. ________ septic: not septic, not germy
18. ________ way: a passage under the ground
19. ________ dated: dated before
20. ________ weekly: twice a week
21. ________ dict: to speak against
22. ________ gress: to move forward
23. ________ ference: the distance around a circle
24. ________ port: to send out, send abroad

Supplying Prefixed Words in Sentences

ACTIVITY 2

Write one of the prefixes on pages 67–68, before each of the words below. Then choose one of the words you have written to insert in the blank space in each of the sentences that follow. It would be advisable to read the sentences before you add prefixes to the words.

________ normal

________ line

________ rail

________ war

________ cycle

________ colored

________ dawn

________ communication

________ marine

________ fly

1. He awoke at a ____________________ hour.
2. She had a ____________________ scarf.
3. The residents wanted to get rid of flies. They put on an ____________________ campaign.
4. He was almost cast out of the communion of the church. He was in danger of ____________________.
5. The child's intelligence was underaverage. He was ____________________.

6. He rode a two-wheeled vehicle, commonly called a __________________.

7. The boat traveled under water. It was a __________________.

8. All was quiet and peaceful in the country during __________________ times.

9. The student drew lines under some of the lines of print in his book. He explained he did it because he liked to __________________ some of the selections.

10. A transportation system using a single rail as a track for cars of various kinds is called a __________________, it is noted for speed.

Interpreting Meanings from Roots

Many of the words in our language are made up of a root combined with another root, one or more prefixes or suffixes, or both prefixes and suffixes. If you know the meaning of many of these common roots, it will help you greatly in understanding what you read.

A list of some common roots is given below. Study the meanings of these roots carefully. Perhaps you know some of them already. Refresh your memory on all of them anyway. The more skillful you become in sensing the meanings of roots, the more successful you will be in getting the full meaning from the material that you read and study in connection with your school assignments.

Root	*Meaning*	*Example*	*Root*	*Meaning*	*Example*
alter	change; other	alternative	luna	moon	lunar
ambi	both	ambidextrous	manu, mani	hand	manual
aqua	water	aquatic	meter, metr	measure	altimeter
bibl, biblio	book	bible	migra	move, travel	migration
bio	life	autobiography	morb	illness	morbid
cent	a hundred	centenary	nebul	cloud	nebulous
center, centr	center	centralize	necr	corpse	necrology
chron	time	chronology	nihil	nothing	annihilation
dexter, dextr	right	dexterous	nomen, nomin	name	cognomen
digit	finger, toe	digital	omni	all, entire	omniscient
domin	master	dominion	ophthalm	eye	ophthalmologist
dorm	sleep	dormant	ornith	bird	ornithology
graph, gram	write, describe	telegraph	pater, patr	father	paternal
itiner	journey	itinerary	ped, pede	foot	biped
junct	join	conjunction	phon	sound	phonics
laud	praise	laudatory	phys, physio	nature	physical
liber, libr	book	library	pli, plic, ply	fold, twist	pliable
lingu	language	linguistic	pos, pose, posi	place, put	position
loqu, locu	speak	loquacious	scrib, script	write, draw	manuscript
logy	a saying, science	psychology	sphere	a globe	spheroid

Interpreting Meanings from Combined Roots and Prefixes

ACTIVITY 3

See if you can write a definition of each of the words below in terms of the meaning of its roots or of a root and its prefix. Refer to the prefix table on pages 67–68 or to the root table above if you need to.

1. centipede __________________________________
2. bibliography __________________________________
3. centrosphere __________________________________
4. adjunct __________________________________
5. biology __________________________________
6. chronometer __________________________________
7. hemisphere __________________________________
8. ophthalmography __________________________________

ACTIVITY 4

Below you will find five prefixes and five roots. Combine each prefix with a root to make another word. Write each of the words you make and tell what it means. You may refer to the prefixes on pages 67–68 and the root words on page 69 if you like.

Prefixes: circum-, post-, bi-, ex-, multi- Roots: ped, pose, lingual, scribe, script

1. ____________________ ____
2. ____________________ ____
3. ____________________ ____
4. ____________________ ____
5. ____________________ ____

Interpreting Meanings from Suffixes

A suffix is placed at the end of a root word to change its meaning. Like the prefix, the suffix can influence the meaning of a word greatly. You need to be very skillful in grasping the meanings of suffixes in order to read well, especially in science, mathematics, and social studies.

Some of the most common suffixes are given in the table below. Review them even if you have had them before. Keep them fresh in your mind.

Suffix	*Meaning*	*Example*	*Suffix*	*Meaning*	*Example*
-able, -ible	capable of being	profitable, visible	-ate	one who, having the quality of	advocate, fortunate
-al, -ial	relating to, that which, act or state of	accidental, arrival, partial	-cle, -cule	little	particle, molecule
			-ence, -ency	state or quality	existence, emergency
-an, -ian	one who, relating to	urban, Canadian	-ent, ant	being, one who	evident, servant
-ance, -ancy	state of being	abundance, infancy	-ic	like, belonging to	angelic, historic
-ar, -er, -or	like, one who	stellar, singer, editor	-id	pertaining to, in a condition of	pyramid, solid
			-ist	one who	motorist
-ary	one who, place where	veterinary, sanctuary	-itis	inflammation of	appendicitis

ACTIVITY 5

Check yourself on how well you know the meaning of suffixes in the words below. Choose one word from each group of three words to write in the blank space in the sentence above the group of words.

1. Uncle Eben had lived a hundred years. He was a ____________________.
   a. cental b. centenarian c. centennial
2. The monk kept a short, simple ________________ of events in the order in which they happened.
   a. chronicle b. chronicler c. chronic
3. If a person uses his right hand, eye, and foot more than the left, he has right ____________________
   a. dominance b. dominate c. dominator
4. The person who named a secretary to be voted upon for the school society was a ____________________.
   a. nominal b. nominate c. nominator
5. A high school student had to see the doctor about eye trouble. He had ____________________.
   a. ophthalmic b. ophthalmitis c. ophthalmist
6. The starlight was almost ____________________ in its brightness.
   a. lunar b. lunarian c. lunary

7. The musician had to be a good ________________ to pump the pedals on the church organ.

a. pedal b. pedate c. pedaler

8. The chemist was conducting ________________ research.

a. scientific b. scientist c. science

9. Plastic is easy to mold when warm because it has considerable ________________.

a. pliable b. pliant c. pliancy

10. The drug was strong. It had high ________________.

a. potential b. potency c. potentate

GETTING THE MOST OUT OF YOUR DICTIONARY

A dictionary is the student's best friend. The most able students usually keep a dictionary close at hand at all times, and make use of it continuously.

You have been accustomed to using a dictionary ever since you were in the elementary grades, but do you get all of the information that you should from your dictionary? Are you able to locate what you want with a minimum of effort and a maximum of speed?

In order to use a dictionary to the best advantage you need to be very skilled in working with the alphabetical arrangement of letters, to know how to make use of pronunciation aids, and to select the right definition for a word in a certain context. In addition to these skills you should have facility in using the dictionary to determine word-spelling, to find out information about the derivation of words, and to ascertain the more favored and common usage of certain words.

In this section of Chapter 9 you will be given practice designed to improve your skills in doing all of the things mentioned above.

Using an Alphabetical Arrangement

You know the alphabet and can repeat it in order, of course. But when you start to look up a word in a dictionary, can you tell instantly whether you should begin your search in the first half of the alphabetical index or the second half? When you decide in which half of the index to look, can you tell instantly about where in the list of letters the one you are looking for will fall?

Check yourself with the exercises below to find out how good you are in using alphabetical arrangement. Try to give your answers immediately, without stopping to go back and repeat the alphabet in order to find the position of a letter.

ACTIVITY 1

In which half of the alphabet is each of the letters below? Write "1st" or "2nd" before each letter.

—f, —w, —m, —h, —t, —o, —d, —j, —r, —y

If you could not do this activity accurately and with speed, then practice locating letters until you can.

ACTIVITY 2

Can you tell quickly the position of a letter in the alphabet in relation to letters that come before and after it? Check yourself by answering the questions below. Write "before" or "after" on the line at the end of each question.

1. Does *t* come before or after *s*? ____________
2. Does *w* come before or after *x*? ____________
3. Does *f* come before or after *e*? ____________
4. Does *j* come before or after *k*? ____________
5. Does *o* come before or after *p*? ____________
6. Does *h* come before or after *g*? ____________
7. Does *q* come before or after *r*? ____________
8. Does *u* come before or after *v*? ____________
9. Does *i* come before or after *h*? ____________
10. Does *p* come before or after *q*? ____________

If you could not answer all of these questions quickly as well as accurately, it would be a good idea to practice locating letters in the alphabet in relation to one another.

ACTIVITY 3

Do you save time by using the guide words at the tops of the pages when looking for a word? If you do use the guide words, do you skim through the words at the top of the page, considering the total alphabetic arrangement within the guide words? If, for example, you want to find *coronary,* do you rapidly turn through the guide words *Coarse-Cob; Convict-Cook;* and *Corner Chair-Cornubianite* because you are looking for a cor word in which o comes after r and in which n comes after o and so on? If so, you'll skim through the guide words until you find two guide words between which the total alphabetical arrangement of *coronary* would fall. These guide words would be *Cornucopia-Coronation.*

See how quickly you can locate the pair of guide words that tell you on what page each of the words below is to be found. Underline the correct pair in each case. Work rapidly. Try to locate each pair of guide words with just a few fleeting glances.

nuptial: Nahuatlan-Namaquan; Nape-Narcissus; Native-Natural Cement; Naveld-Neap; Not-Notheless; Nuclear Sap-Nullibility; Numidian-Nurserymaid; Nut Weevil-Nzambi-si

ostreoid: Oat-Obeyingly; Obligate-Obolus; Ocher-Octavian; Open-Opera; Orchis-Order; Osteoblast-Ostrich; Outer-Outline; Over-Overcast; Owl-Oxford

cicada: Cader-Caesar; Calid-Caliph; Cell-Celatex; Chain-Chakdar; Chuck-Church; Church-Ciconiidae; Circuit-Circum-; Cissing-Citrus

biretta: Bacoun-Baddest; Beard-Beast; Bicirrose-Biedermeier; Billy-Binder; Bird-nest-Birthrate; Bismar-Bite; Blastic-Blazon; Boiler-Boll

Frankenstein: Fairing-Faithworthy; Fash-Fastness; Fein-Fellowship; Flowret-Flummer; Frame-Frangipanni; Frangula-Fraticellian; Fratres Arvales-Free; Frith-Frollo

loch: Lac-Lacinulate; Lance-Landgates; Lank-Lap; Liang-Liberty; Lizzie-Loan Form, Loange-Lobus; Lobus Caudatus-Lock; Lock-Locomotive

rescind: Rearward-Rebear; Recensus-Reciprocal; Reconstruction-Recovery; Reel-Refer, Refresco-Refusion; Relatively-Release; Reprise-Reptilism; Requester-Rescript

wirra: Wainscot Chair-Wake; Weak-Wear; Weight-Weingarten Surface; Widegab-Wig; Wilkinson-Willow; Win-Wind; Winery-Wingseed; Wire-Wis

Give yourself some additional practice in locating words with the use of Guide Words in your dictionary. You can always improve in your ability to use this skill.

Using Pronunciation Aids in the Dictionary

The dictionary is final authority upon the pronunciation of a word. It is possible, however, still to mispronounce a word after looking it up in the dictionary, unless the pronunciation aids are interpreted correctly.

You reviewed the sounds of the vowels and their diacritical markings on pages 60–63. You had practice in syllabication on pages 63–67. You know that you give more stress to the part of the word followed by an accent mark than to any other part. You also know that some words have two accent marks—a primary accent mark, which indicates the part receiving the strongest stress, and a secondary accent mark, which indicates another syllable that is accented but with a lighter stress. You have had considerable experience with dictionary respellings in the past. With all of this information in mind, you should be able to work out dictionary pronunciations with accuracy.

ACTIVITY 4

A page from *Webster's New International Dictionary* appears on page 73.[2] See how well you can work out some of the pronunciations below by referring to this dictionary page.

Choose the answer which you think is correct. Write this number in the space provided for it. All questions about letter sounds are based upon sounds indicated in the dictionary respellings.

A. tambaroora

______ a. How many syllables has this word?
1. 2. 3. 4.

______ b. Which syllable has the strong emphasis?
1. tam 2. ba 3. roo 4. ra

______ c. Which syllable has a secondary stress?
1. tam 2. ba 3. roo 4. ra

______ d. With which word does the syllable tam rhyme?
1. same 2. car 3. ham 4. tall

______ e. Which word has the same vowel sound as oo in tambaroora?
1. book 2. hot 3. rooster 4. foot

______ f. Each of the last two a's in *tambaroora* has the same sound as a in which of the words below?
1. call 2. about 3. black 4. catch

B. Tamburlaine

______ a. How many syllables has this word?
1. 2. 3. 4.

______ b. Which syllable has a strong accent in the first or preferred pronunciation?
1. Tam 2. bur 3. laine

______ c. Which syllable has a lesser accent in the second choice pronunciation?
1. Tam 2. bur 3. laine

______ d. With which of these words does the syllable tam rhyme?
1. faith 2. shame 3. barn 4. lamb

______ e. Which of the syllables below has the same sound of u in it as the u in bur?
1. cute 2. hut 3. turn 4. sure

______ f. Which of the words below has the same sound of a as the a in laine?
1. have 2. care 3. fair 4. fate

---

[2] By permission. From *Webster's New International Dictionary,* Second Edition. Copyright, 1934, 1939, 1945, 1950, 1953, 1954, 1957 by G. & C. Merriam Co.

Tam'a·rin'dus (tăm'ȧ·rĭn'dŭs), *n.* [NL.] *Bot.* A genus of trees, probably of tropical African origin, of the senna family (Caesalpiniaceae), having as the only known species *T. indica*, the tamarind.

tam'a·risk (tăm'ȧ·rĭsk), *n.* [LL. *tamariscus*, L. *tamarix*, *tamarice*, of obscure origin; cf. F. *tamaris*.] **a** Any shrub or tree of the genus *Tamarix*. **b** The German tamarisk (which see).

tam'a·risk. Erron. for TAMARACK.

tamarisk family. The Tamaricaceae.

tamarisk salt tree. An East Indian tamarisk (*Tamarix articullata*) which produces an incrustation of salt (**tamarisk salt**).

Tam'a·rix (tăm'ȧ·rĭks) *n.* [L., tamarisk.] *Bot.* **a** A large genus of shrubs or small trees typifying the family Tamaricaceae, natives of the eastern Mediterranean region and tropical Asia, commonly called *tamarisks*. They have minute scalelike leaves and feathery racemes of small white or pinkish flowers with free stamens and 3–4 styles. *T. gallica*, the salt cedar, is grown for ornament esp. along warm seacoasts. Several Oriental species yield a manna. Tamarisk galls, having a large amount of tannin, are yielded by *T. articulata*. **b** [*not cap.*] A shrub or tree of this genus.

tamarix, *or* **tamarisk**, **family**. The Tamaricaceae.

Tam'a·ro'a (tăm'ȧ·rō'ȧ), *n.* An Indian of an extinct Algonquian tribe of the Illinois Confederacy.

ta'mas (tŭm'ȧs), *n.* [Skr.] *Hindu Philos.* Ignorance, spiritual or intellectual darkness; dullness; inertia. Cf. GUNA, *n.*, 1.

ta·ma'sha (tȧ·mä'shȧ), *n.* [Ar. *tamāsha* a walking about.] **1.** A spectacle; a pageant; excitement. *Anglo-Ind.* **2.** A commotion; fuss. *Colloq.*, *Anglo-Ind.*

Ta'ma·shek' (tä'mä·shĕk'), *n.* The Berber and Tuareg languages of Mauritania and the Sahara. See HAMITIC LANGUAGES **a**.

Ta'mau·li'pe·can (tä'mou·lē'pē·kăn), *adj.* Pertaining to or designating a Mexican Indian linguistic family, comprising several tribes, now extinct, of Coahuila and Durango.

tam'bac (tăm'băk), *n.* Agalloch.

tam'bac. Var. of TOMBAC.

tam'ba·roo'ra (tăm'bȧ·ro͞o'rȧ), *n.* [From a town in Queensland.] A dice game in which equal amounts are subscribed to a pool, to be won by the entrant making the highest throw on condition that he pay for drinks for all the others. A somewhat similar game, in which the winning of the pool is by dicing or any other agreed means, is called *selling the horse*. *Orig. Australia.*

tam'ber (tăm'bẽr), *n.* Timbre.

tam'bo (täm'bō), *n.* [Sp., fr. Quechua *tampu* inn, storehouse.] **a** *Peruvian Archaeol.* An inn or way station on the high roads of the Incas. **b** In and near Peru, a wayside tavern. **c** *Argentina & Paraguay.* A cattle corral; a cow stable.

tam'bo (tăm'bō), *n.* = TAMBOURINE, 2.

Tam·boo'kie, Tam·bou'ki (täm·bo͞o'kĭ), *adj.* Of or pertaining to Tembuland.

tam·boo'kie (täm·bo͞o'kĭ), *n.* [S. Afr. D., fr. *Tembu* a Kaffir tribe (see KAFFIR, 2 **a**) + dim. suff. *-kjė*.] A South African shrub or small tree (*Erythrina acanthocarpa*); also, its extremely light wood (*marble cork*).

tambookie grass. Also **Tambookie grass.** A handsome South African grass (*Sorghum verticilliflorum*) growing to a height of six or eight feet and used for thatching and in making paper. *S. Africa.*

tam'bor (tăm'bẽr). Variant of TAMBOUR.

tam'bor (tăm'bẽr), *n.* [Sp., drum. See TAMBOUR.] **a** *Sp. Amer.* Any of several puffers. **b** The red rockfish (*Sebastopyr ruberrimus*) of the Pacific coast.

tam'bour (tăm'bo͝or; -bōr; 181), *n.* [F. See TABOR; cf. TAMBOURINE.] **1.** *Music.* **a** A drum. **b** A drummer.

2. **a** A frame, usually circular, consisting of two parts fitting one within the other so as to hold firmly a piece of cloth stretched over the smaller one for embroidering. **b** The embroidery done on such a frame. **c** Tambour lace. See TAMBOUR LACE.

3. *Arch.* **a** = 2d DRUM, 10. **b** = 1st BELL, 5.

4. *Fort.* A rough stockadelike work, usually in the form of a redan, to enclose a space before a door or staircase, or at the gorge of a larger work to give flanking defense to a straight wall.

5. *Phonet.* A similar device for recording certain movements of speech. See KYMOGRAPH.

6. *Physiol.* A shallow metallic cup or drum with a thin elastic membrane supporting a writing lever. One or more of these may be connected by an India-rubber tube and used to transmit and register arterial pulsations, blood pressure, respiratory movements, peristaltic contractions, and other slight motions.

7. *Sports.* In court tennis, fives, etc., a sloping buttress or projection for deflecting a ball which strikes it.

tam'bour, *v. t. & i.*; TAM'BOURED (-bo͝ord; -bōrd); TAM'BOUR·ING. To embroider on a tambour; to ornament with tambour. — **tam'bour·er** (-ẽr), *n.*

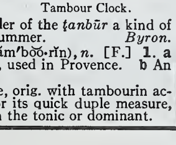
tam'bour, *adj.* **1.** Engaged or used in, or made by, tambour (sense 2 **a**).

2. Like a tambour (sense 1); specif.: designating a type of rolling top or front esp. of a desk, or a desk having such a top or front which is composed of narrow half-round strips of wood glued on canvas.

tam'bour. Variant of 2d TAMBOR.

tam·bou'ra (tŭm·bo͞o'rȧ), **tam·bu'ra**, *n.* [Per. *ṭanbur*. Cf. TABOR.] *Music.* An Asiatic, esp. Indian, instrument of the lute type, but without frets, and used only to produce a drone accompaniment to singing.

tambour clock. A clock enclosed in an upright tambour-shaped case having usually an extended base.



Tambour Clock.

‖**tam'bour' de basque'** (täɴ'bo͞or' dẽ bäsk'). [F.] = TAMBOURINE, 1.

tam'bour·et (tăm'bo͝or·ĕt; tăm'bẽr-), *n.* [*tambour* + *-et*.] A small drum. *Rare.*

tam·bour'gi (tŭm·bo͝or'jē), *n.* [Turk. *ṭanbūrji* a player or seller of the *ṭanbūr* a kind of guitar. See TAMBOURA] A drummer. *Byron.*

tam'bou'rin' (täɴ'bo͞o'răɴ'; *E.* tăm'bo͝o·rĭn), *n.* [F.] **1.** **a** A long, narrow drum, or tabor, used in Provence. **b** An Egyptian bottle-shaped drum.

2. A lively old Provençal dance, orig. with tambourin accompaniment; also, its music or its quick duple measure, commonly with a drone bass on the tonic or dominant.

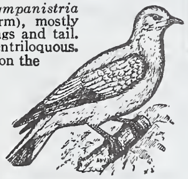
tam'bou·rin (tăm'bo͝o·rĭn), *v. i.* To play on the tambourin.

tam'bou·rine' (tăm'bo͞o·rēn'; -bŭ-rēn'), *n.* [F. *tambourin*, dim. of *tambour*. See TAMBOUR; cf. TABORINE.] **1.** A small drum; esp., a shallow one-headed drum with loose metallic disks or jingles at the sides; a timbrel. It is played by shaking, striking with the hand, or rubbing its head with the thumb.

2. A tambourine player, esp. in a minstrel show.

3. An African wild dove (*Tympanistria tympanistria* or related form), mostly white, with black-tipped wings and tail. Its resonant note is said to be ventriloquous.

Tambourine, 1.



Tambourine, 3. (1/10)

tam'bou·rine', *v. i.* To play on the tambourine.

tam'bour·ist (tăm'bo͝or·ĭst; tăm'bẽr-), *n.* A tambourer.

tambour lace. A lace made by embroidering or darning a pattern on machine-made net; — so called because the net is held in a tambour. Cf. LIMERICK LACE.

tambour stitch. A loop stitch, or railway stitch, like chain stitch, made with a hook on sheer material. — **tambour stitcher.**

tambour work. = TAMBOUR, 2 **b** & **c**.

tam'breet (tăm'brēt), *n.* The duckbill. *Australia.*

tam'bu·ran' (tŭm'bo͞o·rän'), *n.* A title among the Nairs.

tam'bu·rel'lo (täm'bo͞o·rĕl'lō), *n.* [It.] A modification of pallone, played with a ball and rackets like battledores.

Tam'bur·laine (tăm'bẽr·lān; -lān'), *n.* Var. of TAMERLANE (see *Biog.*) used in Marlowe's tragedy ***Tamburlaine the Great*** (printed in 1590).

‖**tam'bu·ro'ne** (täm'bo͞o·rō'nā), *n.* [It.] A large drum; a bass drum.

tame (tām), *adj.*; TAM'ER (tām'ẽr); TAM'EST (tām'ĕst; 119). [ME. *tame*, fr. AS. *tam*; akin to D. *tam*, G. *zahm*, OHG. *zam*, Dan. & Sw. *tam*, ON. *tamr*, L. *domare* to tame, Gr. *daman*, Skr. *damayati* he tames, and perh. to E. *beteem* to vouchsafe. Cf. ADAMANT, DAME, DAUNT, DIAMOND, DOE, INDOMITABLE.] **1.** Reduced from a state of native wildness; specif.: **a** Of animals, domesticated; made tractable and useful to man; not wild. **b** Not showing or not having the ferocity, timidity, etc., characteristic of a wild state; as, the deer in the park are quite *tame;* a *tame* bear; — now used only of animals.

2. Cultivated; as, *tame* land, hay, cherries.

3. Rendered tractable or docile; hence, crushed; subdued; spiritless; also, harmless; gentle.

4. Deficient in spirit, zest, interest, or the like; mild; dull; insipid; as, a *tame* poem; *tame* scenery.

5. *Obs.* **a** Accustomed; familiar. **b** Ineffectual. *Shak.*

Syn. — Domesticated. See GENTLE.

Ant. — Wild, untamed.

☞ COMBINATIONS are:

- **tame-grown**
- **tamehearted**
- **tameheartedness**
- **tame-lived**
- **tame-looking**, *adj.*
- **tame-minded**
- **tame-natured**
- **tame-spirited**
- **tame-witted**

tame, *v. t.*; TAMED (tāmd); TAM'ING (tām'ĭng). [ME. *tamen*, fr. *tame* tame; cf. AS. *temian*, akin to D. *temmen*, G. *zähmen*, OHG. *zemmen*, ON. *temja*, Goth. *gatamjan*. See TAME, *adj.*] To reduce from a wild to a domestic state; to make gentle, tractable, etc.; to domesticate. Hence, to deprive of spirit, courage, or the like; to humble; subdue; also, of colors, to soften; to tone down. — *v. i.* To become tame.

tame (tām), *v. t.* [From ATTAME, *v. t.*] *Obs. exc. Dial. Eng.* **a** To broach; cut into; begin. **b** To prune.

Ta'me (tä'mī), *n.* Tunebo.

tame cat *or* **pussy.** A habitué of another's household; a docile person used as a convenience.

tame cheater. A decoy. *Obs.*

tame'-grief', *adj. & n.* That (which) subdues grief.

tame hay. *Agric.* Hay cut from cultivated grasses.

ta·mein' (tä·mīn'), *n.* [Burmese *thameiṅ* (written *thamin*).] In Burma, a woman's draped garment like the Indian sari.

‖**ta·mén'** (tä·mān'), *n.*; *pl.* TAMENES (-mā'nās). [Sp.] A Mexican Indian porter or burden carrier.

tame poison. The swallowwort (*Cynanchum vincetoxicum*), formerly regarded as an antidote for poisons.

tam'er (tām'ẽr), *n.* One who or that which tames; specif., a device for controlling animals.

Tam'er·lan·ism (tăm'ẽr·lān·ĭz'm), *n.* A practice characteristic of the Tatar conqueror Tamerlane (see *Biog.*).

Ta'mi·as (tā'mĭ·ăs), *n.* [NL., fr. Gr. *tamias* a dispenser, steward.] The genus of ground squirrels comprising the chipmunks, usually limited to the species of eastern North America.

tam'i·dine (tăm'ĭ·dĭn; -dēn), *n.* [Origin uncert.] A cellulose formerly used in filaments for incandescent electric lamps.

Tam'il (tăm'ĭl; tŭm'ĭl), *n.* **1.** A member of the most enterprising branch of the Dravidian race, mostly Hindus, though a few are still animists. They are numerous throughout southern India and northern Ceylon.

2. The oldest, most cultivated, and best known of the Dravidian languages. It has numerous dialects, and the standard language itself is divided into a poetic and an ordinary dialect. Ancient Tamil had an alphabet of its own, the ***Vatteluttu***, "round writing"; modern Tamil uses one descended from the Brahmi character. See DRAVIDIAN LANGUAGES.

Tam'il, *adj.* Of or pertaining to the Tamils or their language or literature.

Ta·mil'i·an (tȧ·mĭl'ĭ·ăn), *adj. & n.* **a** Tamil. **b** Dravidian.

Ta·mil'ic (-ĭk), *adj.* **a** Tamil. **b** Dravidian. — *n.* **a** The Tamil language. **b** The Dravidian languages.

tam'ine, tam'in (tăm'ĭn), *n.* [F. *étamine*, fr. L. *stamineus* made of threads, fr. *stamen* warp, a thread, cloth. See STAMEN; cf. ESTAMENE, ETAMINE, STAMIN, TAMMY.] = STAMIN, 1 **a**. *Obs.*

Tam'ing of the Shrew, The (tām'ĭng). A comedy by Shakespeare. The date of its composition is not certain; it was first published in the 1623 folio. See KATHARINE.

tam'is (tăm'ĭs), *n.* [F., a kind of sieve, of uncert. origin.] A strainer made of a kind of woolen cloth; also, the cloth; tammy.

tam'ise (tăm'ĭs; tȧ·mēz'), *n.* [Cf. TAMIS.] A thin woolen fabric. *Trade Name.*

Tam' Lin' (tȧm' lĭn'). The hero of an old Scottish ballad of this name, delivered from the fairies by his brave lass, who, following his instructions, holds him fast while they transform him into various dreadful shapes.

tam·lung' (tăm·lŭng'), *n. sing. & pl.* [Siamese *tamlïṅ*.] See WEIGHT, *Table.*

Tam'mann's rule (täm'änz). [After Gustav *Tammann* (b. 1861), Ger. chemist.] **a** *Metal.* The rule that in binary alloys a less fusible metal dissolves more of a more fusible metal (in the solid phase) than the more fusible does of the less fusible. **b** *Physical Chem.* The rule that if one metal in a group of the periodic table combines chemically with a metal not of the group, the other members will do so, and if one metal fails to combine with a metal not of the group, the others will also fail to do so.

Tam'ma·ny (tăm'ȧ·nĭ), *n.* [From Lenape *Tamanend*, name of a Delaware chief, lit., the affable. See TAMMANY, SAINT.] The Tammany Society or Tammany Hall; — often used as a byname for corrupt influence in municipal government and politics. See TAMMANY, SAINT. — **Tam·ma'ni·al** (tă·mā'nĭ·ăl), *adj.* — **Tam'ma·ny**, *adj.*

Tammany, Saint. A Delaware chief, Tamanend, Tammenund, or Tammany, of the 17th and 18th centuries, traditionally famous for wisdom in council and friendliness toward the whites. He was facetiously canonized as the patron saint of the republic, and his name was adopted by the **Tammany Society**, a fraternal and benevolent organization founded in New York City in 1789. The society's building, **Tammany Hall**, is leased to, and gives its name to, a nominally distinct political club which has usually controlled the local Democratic party. See TWEED RING.

Tam'ma·ny·ism (tăm'ȧ·nĭ·ĭz'm), *n.* The system or principles attributed to Tammany.

Tam'ma·ny·ite (tăm'ȧ·nĭ·īt), *n.* A member or adherent of the Tammany Society or of Tammany Hall.

Tam'ma·ny·ize (-īz), *v. t.* Also **Tam'ma·nize** (tăm'ȧ-nīz). To bring under Tammany rule, or a domination such as that of Tammany Hall.

tam'mie (tȧm'ĭ), *n.* [Var. of TOMMY.] A loaf or roll of bread. *Local, Scot.*

tam'mie no'rie, *or* **tam'my no'rie** (tȧm'ĭ nō'rĭ). The puffin *Fratercula artica*. *Scot.*

Tam'muz (tȧm'mo͞oz; *Bib.* tăm'ŭz), *n.* [Heb. *Tammūz*, fr. Assyr.-Bab. *Du'ūzu*, *Dūzu*, fr. Sumerian *Dumuzi*, lit., real child, or perh. the son who rises.] **1.** *Babylon. Relig.* A god of agriculture and flocks, and spirit of vegetation. He is the lover of Ishtar, by whom he is brought back with infinite pains from the lower world after having mysteriously perished, his life thus symbolizing the dying of vegetation in the winter and its return in the spring. The hot summer month, Tammuz, is named after him. His annual festival was just before the summer solstice, and consisted of a period of mourning for his loss (cf. *Ezek.* viii. 14, "The women weeping for Tammuz"), followed by rejoicing at his reappearance. His worship was widespread among the northern Semites. Among the Phoenicians his counterpart was Adonis.

2. See JEWISH CALENDAR.

tam'my (tăm'ĭ), *n.*; *pl.* -MIES (-ĭz). [Prob. fr. TAMINE.] A kind of woolen, or woolen and cotton, cloth, often highly glazed, used for gowns, linings, curtains, etc.

tam'my, *n.* [Prob. fr. TAMIS.] A strainer, or sieve, made of this material; a tamis.

tam'my, *v. t.* To strain through a tammy.

tam'my, *n.* A tam-o'-shanter.

Ta·mo'ne·a (tȧ·mō'nē·ȧ), *n.* [NL., of Arawakan or Cariban origin.] *Bot.* **a** Syn. of MICONIA. **b** [*not cap.*] Any flower or plant of the genus *Miconia*.

Tam'o·ra (tăm'ō·rȧ), *n.* The Queen of the Goths in *Titus Andronicus*.

Tam' o' Shan'ter (tăm'ŏ shăn'tẽr). **1.** The title and hero of a poem by Burns. He is a drunken farmer, who, riding home late from Ayr, in a stormy night, disturbed a witch revel in the haunted kirk of Alloway. The hags pursued him to the keystone of the bridge over the river Doon, but there stopped, as they could not cross running water. One, however, plucked the tail from his mare Maggie.

2. [*not cap. and usually hyphened.*] A Scottish cap of wool or the like, having a round, flattish top much wider than the headband and usually a tassel in the center.

tam'-o'-shan'tered (-tẽrd), *adj.* Wearing a tam-o'-shanter.

tamp (tămp), *v. t.*; TAMPED (tămpt); TAMP'ING. [Prob. fr. F. *tamponner* to plug or stop. See TAMPION.] **1.** To fill up (a drill hole) above the blasting charge with clay, earth, sand, or other material.

2. To drive in or down by a succession of light or medium blows; as, to *tamp* earth; to *tamp* tobacco in a pipe; to *tamp* clay over a blasting charge.

3. To fill in or pack round with clay, earth, moss, etc.

tamp, *n.* A tool for tamping.

tam'pan (tăm'păn), *n.* A venomous South African tick.

tam'pang (tăm'păng), *n. sing. & pl.* [Malay *tampaṅ*.] **1.** See WEIGHT, *Table.* **2.** = HAT MONEY, 2.

tamp'er (tămp'ẽr), *n.* One who or that which tamps; specif.: **a** One who prepares for blasting by filling the hole in which the charge has been placed. **b** A tamping iron. **c** A tool or machine for tamping or compressing a pavement in the making.

tam'per (tăm'pẽr), *v.*; -PERED (-pẽrd); -PER·ING. [F. *tempérer* to temper. See TEMPER, *v.*] *Intransitive:* **1.** To work clay so as to mix it. *Obs.*

2. To deal secretly or unfairly; to scheme or plot; specif., to use bribery.

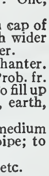
3. To meddle so as to alter a thing; esp., to make corrupting or perverting changes; as, to *tamper* with a document or a text; to interfere improperly.

4. To meddle; to busy oneself rashly; to try trifling or foolish experiments; — commonly with *with;* as, to *tamper* with a disease.

——, *Transitive:* **1.** To temper (clay). *Obs.*

2. To influence improperly by one's tampering.

Syn. — See MEDDLE.



Tamper c.

tam'per·er (-ẽr), *n.* One who tampers.

Tam·pi'co (tăm·pē'kō), *adj.* Of or from Tampico, a seaport city in Mexico.

Tampico fiber. Also **Tampico hemp.** See ISTLE **b**.

Tampico jalap. *Pharm.* The root of a Mexican morning-glory (*Ipomoea simulans*); also, the resin obtained from this root.

tamp'ing (tămp'ĭng), *n.* Act of one who tamps; specif., act of filling up a hole preparatory to blasting; also, the material used in tamping.

C. Tammuz

_____ a. How many syllables has this word?
1. 2. 3. 4.

_____ b. Which part of the word is given the stress?
1. Tam 2. muz 3. ta 4. mu

_____ c. In the first pronunciation of the word, the a in tam sounds like the a in which of these words?
1. tail 2. ask 3. bat 4. male

_____ d. In the first pronunciation the u in muz sounds like the vowel or vowels in which of these words?
1. foot 2. mule 3. cut 4. food

_____ e. In the pronunciation of the word as used in the Bible, the a in tam has a sound similar to the a in which of these words?
1. rake 2. hat 3. arm 4. around

_____ f. In the Biblical pronunciation, the u in muz has a sound similar to u in which of these words?
1. house 2. huge 3. bus 4. busy

D. Tampico

_____ a. How many syllables has this word?
1. 2. 3. 4.

_____ b. Which part of the word is stressed?
1. Tam 2. pi 3. co

_____ c. The a in tam sounds like the a in one of the words below. Which one?
1. abode 2. talk 3. vat 4. faith

_____ d. The i in the syllable pi sounds like the i in one of the words below. Which one?
1. pickle 2. pique 3. pink 4. pike

_____ e. In the third syllable, the c in co sounds like the c in one of the words below. Which one?
1. cent 2. curve 3. cypher 4. cigar

_____ f. The o in the third syllable sounds like the o in one of the words below. Which one?
1. gorilla 2. cold 3. problem 4. cost

Can you pronounce all of the above words smoothly and correctly? Pronounce them to your teacher and ask her to check your pronunciation. If you have trouble, then it would be advisable for you to devote additional study to letter sounds, and pronunciation aids given in your dictionary.

Choosing the Right Definition of a Word

We have discussed previously in this book that a word may have several different meanings and that its particular meaning depends upon the context in which it is found. The dictionary states different meanings for many words and it numbers these meanings 1, 2, 3, and so on. It is up to you, however, to find out which of these different meanings is the right meaning for the word as used in a particular sentence.

See how well you can choose the right meaning for some of the words in the dictionary page as used in particular sentences.

ACTIVITY 5

Read the sentences beneath each word. Find the right dictionary meaning of the word in each sentence. Write the number of the appropriate dictionary definition on the line to the left of the sentence.

A. tambour

_____ (a) The doctor used a *tambour* in registering the breathing movements of Mr. Roach.

_____ (b) Mrs. Wood wanted to take embroidery lessons. She had to buy a *tambour.*

B. tambourine

_____ (a) Tom tried to get close enough to the *tambourine* to hear its song, but it suddenly flew away.

_____ (b) The manager of the show employed one of the most talented *tambourines* that he could find.

_____ (c) The band played many different instruments. The one Susan liked best was the *tambourine.*

C. tame

_____ (a) Judith thought the new movie was very *tame.*

_____ (b) Mr. Fowler grew some *tame* blackberries in his back yard.

_____ (c) Sam had a pet owl that was very *tame.*

_____ (d) After a long and bitter fight the inhabitants became quite *tame.*

D. Tam o'Shanter

_____ (a) Jane bought a new red *tam-o'-shanter* to wear during the fall months.

_____ (b) Harry enjoyed reading about *Tam o'Shanter.*

E. tamper

_____ (a) Making foolish experiments, the quack *tampered* with a disease that a good doctor could have cured.

_____ (b) The suspect *tampered* with a witness by offering him a sum of money to change his testimony.

_____ (c) When Judith visited the pottery, she saw the workers *tamper* the clay.

Did you check the right meaning for the word in all of these sentences?

To get the most out of your dictionary think about the particular sentence in which the word you are looking up occurs. Then read all of the definitions for the word, and carefully choose the meaning that is most appropriate.

Finding Synonyms

ACTIVITY 6

Frequently you will find the abbreviation "Syn." following the definitions of a word. This abbreviation stands for "Synonym," a word which means the same or nearly the same as the word being defined. It will help you to build your vocabulary if you make note of synonyms.

Turn back to page 73, and find a synonym for each of the words below. Then cross out the word in the sentence and write the synonym above the word you crossed out. Read the sentence with the new word in it and see if it means the same.

(a) tamed
Horses once were wild, but now most countries have

______
tamed them.

(b) tamper
Mr. Oliver was a nuisance. He tampered with other people's business.

Finding Word Origins

Every word has a history. A study of word histories is not only fascinating in itself but it helps us better to understand word pronunciations and meanings.

The word *pseudo*, for example, means sham or deceptive. According to Webster its origin was as follows: [Gr., fr. stem of *pseudēs* false, *pseudos* falsehood, *pseudein* to deceive.]

The abbreviation Gr. stands for Greek; fr. stands for from. So the note in the dictionary tells us that the word *pseudo* comes from the Greek stem *pseudēs*.

ACTIVITY 7

Turn to page 73, look up and write the origin of the words below. Use one complete sentence in your explanation.

You will find some abbreviations in the explanations of these word origins. Usually there is a table of abbreviations and their meanings in the front of dictionary. No doubt you can tell what the abbreviations stand for in the references on page 73. If you can't, look them up in a dictionary.

(a) tambourine: ______________________________

____

(b) Tammuz: ______________________________

____

(c) tamper: ______________________________

____

Frequently note the origin of words that you look up.

You will find studying word origins to be interesting and instructive.

Using a Dictionary for Spelling

One of the most useful aids which the dictionary has to offer is assistance in spelling.

But how do you find a word in the dictionary if you don't know how to spell it?

Perhaps you think it may be spelled in one of two ways. If so, look it up as if it were spelled one of these ways. If you don't find it, look it up as if it were spelled the other way. If you don't know how it is spelled at all, sound it out and think of the letters or groups of letters that the sounds represent. The pronunciation table in the front of your dictionary will tell you about different letters that have the same sound, for example f, ph, and gh all have the same sound in feel, philosophy, and laugh. So if you were looking up a word that contained this sound, you might try three spellings before you find the right one.

If you want to learn to spell a word from a dictionary reference, you will find this procedure helpful:

1. Study the word carefully, comparing the misspelled form with the spelled form and noting any parts of the word that are spelled differently than the pronunciation would indicate.
2. Pronounce the word to yourself.
3. Use the word in a sentence.
4. Visualize it, that is, try to see it as a whole.
5. Focus attention on difficult parts.
6. Write the word from memory.
7. Check it.
8. If wrong, find your error, rewrite, and recheck.

ACTIVITY 8

Find three words on page 73 which you think are difficult to spell. Choose words other than those with which you have been working. Use the procedure suggested above in studying the words. You may use the blanks below for writing the words when you think that you know how to spell them.

______________ ______________ ______________

Summary

Whenever you are not sure of the pronunciation or meaning of a word, look it up in a dictionary. Don't just skip it and trust to luck that you will understand what you are reading. When you find the definitions be sure to choose from them the one that best fits the context in which you find the word.

If you are doubtful about the spelling of a word or if you need an antonym or synonym while you are writing, the dictionary offers you first aid.

Make a game of running down word origins. This fascinating pursuit will help build your vocabulary and aid you to get fuller meanings from your reading.

SECTION TWO

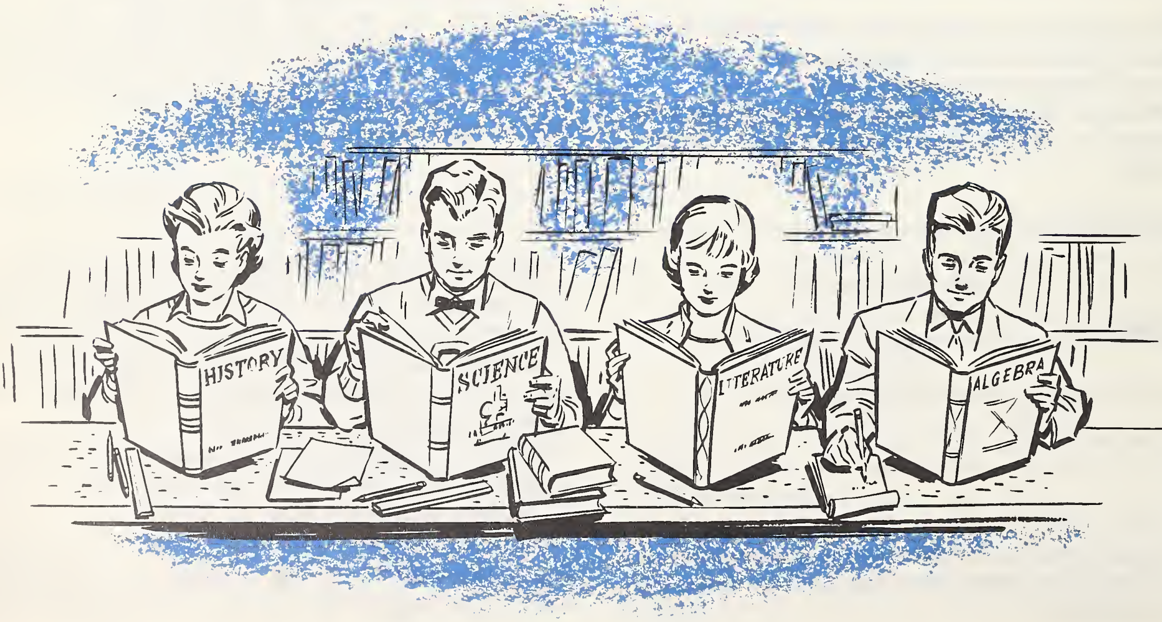
HOW TO READ IN DIFFERENT SUBJECT FIELDS

COMMON SKILLS APPLIED

The reading skills with which you have been working in Section One of this book are common to all subject fields. Whether you are reading materials for science, history, mathematics, literature, shop, or home economics, you may upon occasion use several of the skills that you have been trying to improve in Section One. But often you will use these skills in different ways than you used them in Section One when working in a special subject field. In this part of the book you will be given practice in applying these common skills in different ways for different purposes most frequently needed in studying in each of these different fields: (1) science, (2) history, (3) literature, and (4) mathematics.

SPECIAL SKILLS TAUGHT

Not only will you have experience in applying the *common* reading skills in the different subject fields, but also you will be shown how to use *special* skills needed in each of the four different subject matter areas. Investigators have proved that while certain skills are common to all fields, special skills are needed in reading special subjects. They have also proved that when one of these special skills is practiced, improvement takes place. This means that if you wish to improve special skills needed in reading in each subject field, then you need to practice these special skills. This section of the book will deal particularly with the special skills needed in reading science, history, mathematics, and literature.



CHAPTER 10

HOW TO READ IN SCIENCE

HOW TO READ A POPULAR ARTICLE IN SCIENCE

Special science patterns and techniques will be discussed in connection with the next several selections. The article which you are about to read, however, is of the easy, popular type such as you find in the better magazines. In reading this science article, you don't need to employ special skills. Some of the common skills with which you worked in Section One will serve you very well.

1. Preview: Study the pronunciation and meaning of the words at the bottom of the page; read the main idea of the first and last paragraph.
2. Next, read the article as rapidly as you can for general impressions. Time yourself on this reading.
3. Take the comprehension test under Activity 1 on page 78.

The Abominable Snowmen

In the high valleys of the Himalayas there exists a mystery, something which is unknown or at least unexplained. The source of this enigma is strange footprints in the snow. The natives of this region believe they are made by strange creatures who resemble human beings, but who are wild, fierce and dangerous. White explorers have usually been more sceptical and have indicated the prints could have been made by a huge animal such as a bear.

The Sherpa porters have a variety of names for this unknown creature such as *yeti, mirka,* and *sogpa,* but the popular title, the "abominable snowman" is a literal translation of their term *metohkangmi.* "Kangmi" means "snowman" while "metoh" is a term suggesting disgust, meaning "abominable" or "foul."

Explorers of the Himalayas have brought back tales of this animal since the nineteenth century. The first published description occurs in a book written by Major Waddell in 1889 to record a journey from Darjeeling to northeastern Sikkim. In his book *Among the Himalayas,* he states:

> "Some large footprints in the snow led across our track and away up to the higher peaks. These were alleged to be the trail of the hairy wild men who are believed to live amongst the eternal snows, along with the mythical white lions whose roar is reputed to be heard during storms. The belief in these creatures is universal among the Tibetans."

Waddell was the first to suggest that the creature might be a bear.

Since then most of the Himalayan expeditions have reported evidence which tends to support one theory or another. Scientists, geographers, photographers and anthropologists have all sought confirmation of various theories, which have attempted to explain this phenomenon. A popular British newspaper, the *Daily Mail* financed an expedition to Nepal to find the snowman, after a Swiss explorer had stated that he had seen several tracks of different sizes as if a herd or family had been moving through the snow. Russian expeditions in 1957 and 1958 have also given some confirmation that the creature exists north of the Himalayas.

Why is there so much doubt concerning the existence of the "snowman"? There is little tangible evidence. Strange footprints in the snow have been seen by many. Unfortunately these are impermanent evidence, for under the rapid action of the sun's rays these footprints change in both shape and size. Photographs of these footprints have been made, the most notable being taken by Eric Shipton. Again because of distortion it is impossible to draw

---

speculation (spek′ yů lā′ shən): thought, guess.
enigma (i nig′ mə): a puzzling statement; a riddle.
sceptical (skep′tə kəl): inclined to doubt, not believing easily.
sceptic (skep′ tic): a person who questions the truth of theories or apparent facts.
tangible (tan′ jə bəl): capable of being touched or felt, real.
spoor (spür): the trail or track of a wild animal.
phenomenon (fənom′ ə non′): something extraordinary or remarkable.
proto-type (pro′ tə tip′): the first or primary type of anything; the original or model.
ingenuity (in jənū′ə te or in′ gə nü tē): skill in planning and inventing.

precise conclusions, but the majority of the evidence suggests that the creature is a biped, with five toes and an instep, with only partial indication of a heel.

The explorers who claim to have sighted the creature at a distance corroborate the description given by the native Tibetans. So far no one has been able to capture or photograph the monster. Reports appear to agree that it walks on hind legs, is covered with hair, and is about the size of an average man. Some reports of the spoor indicate that the animal uses considerable intelligence in negotiating the treacherous snow and ice surfaces above the tree-line.

Several suggestions have been made to explain this strange phenomenon. Some scientists argue that the tracks are made by a species of bear or snow leopard. As this animal moves, the spoor of its hind feet blot out those of its fore-paws, and so give the impression that it is a two-legged creature. Moreover, these sceptics argue that bears often walk on their hind legs particularly when hunting for food.

Another widely held theory is that this animal is an unknown type of ape. At present there are three species of known apes, quite different in type and appearance. The chimpanzee and gorilla live in Africa, while the orangutan lives in Sumatra. However, none of the three walks on its hind legs exclusively, but all use a four-legged walk whenever it is convenient. Such an ape living in the high altitude of the Himalayan mountains would seem to have had to adapt very considerably to a different habitat, and probably to have become carnivorous. The main support for this theory comes from the fact that the footprint photographed by Shipton most closely resembles that of an African mountain gorilla.

One group of scientists argue that this is perhaps a proto-type of primitive human, perhaps the supposedly extinct "giant man of China." Several skulls and skeletons of primitive men of a species hitherto unknown have been excavated by anthropologists in Java and south-east Asia during the last thirty years. It is thus argued that such a human proto-type might have immigrated to the very high altitudes and, having adapted to these conditions, has existed in these remote regions for thousands of centuries.

This mystery of the land of eternal snows persists. Is the abominable snowman a species of bear, an ape, or a human proto-type? Is this creature merely a myth? Though the mysteries of space are yielding to man's ingenuity, this earthly enigma remains unsolved.

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

$\frac{\text{No. words} \quad 840}{\text{No. seconds}} \times 60 =$ ____WPM

ACTIVITY 1

Comprehension:

Write the answers to the following questions on a piece of paper.

1. Where is the "abominable snowman" found?

2. What is the origin of the term "abominable snowman"?

3. Who first wrote about the creature?

4. Name a photographer who attempted to obtain evidence of the tracks.

5. Name three nations which have sent expeditions which attempted to discover the snowman.

6. Give two reasons why there is little tangible evidence.

7. State the three possible explanations of the phenomenon. Give one reason for each explanation.

8. Which explanation do you think most likely? Give two reasons for your decision.

9. Do you think the mystery will ever be solved? Give a reason for your answer.

Comprehension score: ____

WPM: ____

Science textbooks have different patterns of writing in them. It will be helpful for you to learn to identify each pattern, then to use the approach and reading skills best suited to each of those different patterns.

Some of the patterns with which you will work in the chapter are: classification pattern, problem solving pattern, description of technical process pattern, "straight statement-of-fact" pattern, and the experimenting pattern. You will find all of these patterns in your science books, also.

HOW TO READ A CLASSIFICATION SELECTION

The classification pattern is one in which information is given about certain groups of living things, objects, or processes which belong to the same general class.

The new skills that you need in reading the classification pattern are (1) reading to grasp the main classes within the large classification, and (2) reading to find out how these classes are alike and how they are different.

Use the following procedure in studying the classification selection, "Precipitation":

1. Skim the boldface and italic headings to find: (a) the two main topics, (b) the smaller classifications under each of the topics.

2. Next read the selection as a whole to find: (a) the similarities and differences between the two processes described under the first main heading, and (b) the similarities and differences among the different classes of precipitation given under the second large heading.

3. Time yourself in reading this selection. You won't be able to read it as fast as you read the popular article on pages 77–78, but you should be able to read this type of science material with considerable speed.

Precipitation [1]

The dictionary defines the word *precipitation* as a "falling down," and when the meteorologist uses this word with regard to the weather he is speaking of the rain, snow, sleet, and hail which fall down to earth from the atmosphere. All of these examples of precipitation have something in common. In every case what falls to the earth is water in one form or another.

Precipitation Processes

Evaporation. In order to understand why precipitation occurs and to appreciate some of the similarities and differences in the various types of precipitation, we must first find out how water gets into the atmosphere. This will also help us to understand some of the other weather elements like dew and frost, and clouds and fog.

Of course you have seen water disappear from a wet street or from the surface of a fish tank. We call this disappearance *evaporation.* Why does water evaporate and where does the water go?

Scientists know that water, like all other substances in the universe, is composed of countless billions of tiny particles known as *molecules.* The molecules of water are so small they cannot be seen with even the most powerful electron microscopes ever devised. There is ample proof of their existence, however, and we also know that these molecules are constantly darting about and colliding.

Now, consider the water in an aquarium. Throughout the tank, water molecules are speeding about and bumping into each other. The constant collisions prevent the tiny particles from getting very far. At the surface of the tank, however, many molecules can escape freely into the air. This is the process of *evaporation* and it is through this process that water is constantly entering the atmosphere. The molecules of water are, of course, too small to be seen, and so we speak of the water in the air as an invisible *vapor.* When the temperature increases, the speed at which the molecules move also increases. Faster-moving molecules escape more rapidly and evaporation is speeded up when it is warm.

The sun's rays, beating down on the oceans, lakes, and rivers of the earth, cause the surface water to evaporate and enter the surrounding atmosphere. When the amount of vapor is great, we feel uncomfortable and say that it is *humid.* At any particular temperature the air can hold only a certain amount of water vapor. If the air is holding a maximum amount of vapor, no more water can evaporate. We then say that the air is *saturated* with moisture. The meteorologist also says that the humidity at such a time is 100%.

Condensation. Fortunately, the process of evaporation can reverse itself. Otherwise, the humidity would always be high and precipitation would never take place. The process which is the reverse of evaporation is called *condensation* and it occurs when the temperature falls. As it becomes cooler, water molecules begin to move more slowly. Collisions take place and molecules hang together to form tiny droplets which are no longer invisible.

Cloud Formation. The condensation process explains how clouds are formed. Warm air, laden with moisture, rises into the atmosphere. As the air rises it tends to expand and this causes the temperature to drop. The falling temperature slows down the speed of molecular movement, and the water molecules gather together on dust particles floating around in the atmosphere. This condensation results in the formation of billions of tiny water droplets that make up a cloud. The droplets are so small and lightweight that they are hardly affected by gravity. Slight air movements keep them floating miles above the earth.

Sometimes a mass of moist air close to the earth's surface may cool off rather suddenly. This may happen when a body of cold air moves in or when the moist air drifts over a cooler body of water. When this occurs, condensation takes place, but the cloud which forms is right on the surface of the earth rather than high in the atmosphere. Such a low-hanging cloud is called a *fog*. In composition the fog is exactly the same as a cloud. The only difference between the two is the place in which each occurs. The cloud is high; the fog forms on the ground.

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[1] This selection was prepared by Irving Zeichner.

In certain areas of the world, such as Newfoundland and the city of London, fogs occur frequently. This is because local conditions bring about sudden cooling of moisture-laden masses of air rather often.

Dew and Frost. As the sun warms the earth during the day, evaporation continues to take place. At night, however, the earth cools down as it gives off some of the heat it has received from the sun.

Grass loses its heat especially fast. The air which surrounds the grass is full of water vapor. As the moving water molecules strike the cool blades, they slow down and condensation takes place. Thus, millions of molecules come together on the grass to form the tiny water droplets we call *dew*. Can you understand why dew forms readily on cool, clear nights? The next time you have an ice cream soda you can watch the process of dew formation. As the cold ice cream lowers the temperature of the glass, water vapor in the surrounding atmosphere condenses on the surface and the glass seems to "sweat." This is artificial dew, perhaps, but it forms for exactly the same reason that dew forms in nature.

The freezing point of water is 32 degrees Fahrenheit. If the temperature should be below freezing when condensation takes place on the grass or on the ground, dew will not form. Instead of growing into dewdrops, the water molecules become tiny crystals of ice. A mass of ice crystals that form in this way is known as *frost*. It is important to remember that frost is not dew which has frozen. The frost particles form directly from the molecular state when the temperature is sub-freezing. Dew formation and frost formation are essentially the same. The only difference between them is the temperature at which each takes place.

Forms of Precipitation

Rain and Snow. You will remember that the particles which make up a cloud are very tiny. In fact, the water droplets are so small they float about without falling to the ground. At times, however, these water particles tend to get larger. This may happen when several droplets join with others over and over again. Or, growth may occur if the process of condensation continues to take place. In either event, the original droplet may grow a million times its size into a full sized drop. Of course, the air can no longer keep such large drops afloat and precipitation takes place in the form of rain.

Recent rain-making experiments are based upon the belief that condensation can be hurried by providing more particles on which molecules can gather. The chemical silver iodide has been found effective in these experiments. When sprayed into a cloud that has certain proper conditions of temperature and size, silver iodide or powdered dry ice seems to hasten the formation of raindrops. The process is sometimes called cloud "seeding" and, while still far from perfected, it may prove the answer to man's need to provide precipitation in time of drought.

If there is a great deal of water vapor in the atmosphere and the temperature is very low, snow crystals form rather than water droplets. These crystals are six-sided and of countless different designs. As condensation continues, the snowflakes grow larger and become heavy enough to fall. Sometimes many cloud particles will freeze together to form very soft snow pellets. If the snow flakes or snow pellets do not encounter melting temperatures on their journey downward from the clouds, we have a snowfall.

Again, as in the case of dew and frost, it is important to notice that snow and rain form differently. The temperature of the cloud mostly determines whether raindrops or snow crystals will form directly from the molecules. Snow may melt as it descends and turn into rain. Rain, however, cannot turn to snow.

Sleet and Hail. The two forms of precipitation which are most often confused are sleet and hail. In both cases particles of ice fall to the ground. However, the conditions under which ice forms in one instance are quite different from the other.

Of the two phenomena, sleet is the simpler to explain. When raindrops fall through a region of below-freezing temperatures, they turn into ice pellets. These particles of frozen water are usually rather small in size although quite hard and able to bounce when they strike the ground. Sleet, then, is merely frozen rain and, naturally, sleet storms occur in cold weather.

Hail also starts out as rain but the history of a hailstone is far different from that of a pellet of sleet. Scientists are not absolutely certain of the exact nature of hail formation. The present belief held by most experts, however, is somewhat like this: a hailstone starts out as a raindrop formed high in a thundercloud. The cold temperature of the high altitude causes the raindrop to freeze. As the frozen drop falls through the cloud more condensation of water takes place around its surface. Within the thundercloud there are strong vertical winds. These winds sweep the drop back up to a low temperature region, and the surface water freezes into another layer of ice. Now, as the ice particle drops, more water condenses on its surface. Again, an updraft takes the particle to a freezing zone and another layer of ice forms. Thus, the hailstone grows by adding layer after layer of ice. Finally the stone is so large it cannot be swept upward any longer. It then falls to the earth.

Hail is the most destructive of all types of precipitation. Hailstones have been known to reach the size of baseballs. Crops have been wiped out, livestock killed, property damaged by these falling rocks of ice.

If you split a hailstone in half and examine it, you will see the onionlike rings which result from the build-up of ice in layers. Sleet pellets do not show this kind of structure. Another difference between sleet and hail is the time of the year in which each occurs. While sleet is winter precipitation, hail usually falls in the summer. This is the time when thunderclouds are prevalent and hailstorms can develop. Since hailstones are so large, they can reach the ground without melting in the warm weather.

In this discussion of the types of precipitation you may have realized that water is never really destroyed. Water molecules, which may sometimes exist as an invisible vapor, are the same molecules that change into clouds or raindrops or sleet pellets. The only change is in the arrangement and position of the molecules themselves. The forces of nature may cause water to evaporate or to condense. This results in a great natural "water cycle" in which water is constantly changing its form.

Evaporation takes place from the surface of bodies of water and from the plants and animals on the earth. Precipitation, or condensation as dew and frost, brings the water back to where it started. This water cycle is essential to our lives, for upon it depend the growth of our crops, the flow of our rivers, and the health of our livestock.

Perhaps the only desirable improvement upon this wonderful natural process is bringing water to the right place at the right time. This is a problem for the scientists of the present and future. Someday, through scientific research, the world may see the end of drought and floods as enemies of man. Controlled precipitation may turn our deserts back into rich and productive lands.

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

$\frac{\text{No. words}}{\text{No. seconds}} \quad \frac{1960}{} \times 60 =$ ____WPM

ACTIVITY 1

In the spaces provided below write the differences and likenesses among four forms of precipitation.

PRECIPITATION				
FORMS OF PRECIPITATION	RAIN	SNOW	SLEET	HAIL
LIKENESSES				
DIFFERENCES				

ACTIVITY 2

1. Explain the differences between evaporation and condensation. Be sure to include a description of the activity of the molecules in these processes. Use a separate piece of paper.
2. What is the basic difference between dew and frost as compared with snow, rain, hail, and sleet? Use a separate piece of paper for your answer.

Lightning is an enemy of forests. It is responsible for causing many forest fires. Scientists, however, are making strides in controlling this problem. With advances that are being made, they predict that eventually fires caused by lightning can be prevented more easily than fires resulting from other causes.

HOW TO READ THE PROBLEM-SOLVING PATTERN IN SCIENCE

A very common pattern which is found in science material is one that deals with problems. In such material a problem is stated, information is given telling how scientists experimented in an attempt to solve the problem, and the result is given.

This pattern is usually easy to read. The only exception is material in which the explanations of the experiments are technical. In any event, all you have to do in reading the problem-solving pattern is to grasp: (a) the problem, (b) what was done about it, (c) the result. Read to get clear-cut information about these three things, and you will work with the problem-solving pattern effectively.

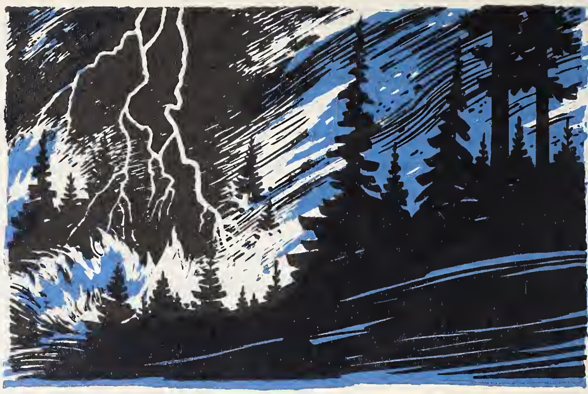
The selection below is science material of the problem-solving type.

1. Rapidly skim through the italicized headings to find out what the problems are.
2. Then read the entire selection rapidly to find out: (a) what was done about each problem, and (b) the result. Time yourself when reading this selection as a whole.

Research Solves Forest Problems [2]

Beginning time: Hr._____Min._____Sec._____

Forestry is a science and, as such, those who practice it must have one thing that makes scientific progress possible: the benefit of research. Every forestry problem solved by research lets forestry advance one more vital step.



Research to solve problems is a major job of the Federal Department of Lands and Forests. Research is also conducted at times by the provincial forestry services, the universities and private industries. Forestry research in Canada covers the whole field of forestry, including forest protection, forest management, watershed management, utilization of forest products, forest entomology, forest pathology and forest economics.

Redeeming the American Elm. The Dutch elm disease is widely distributed in eastern Canada. Discovered in 1944 in Quebec, it has now extended over most of this province and also affects the elms of Ontario as well as those of New Brunswick. Spraying and sanitation procedures used to control the beetle vectors, have given the assurance that elm will not be eliminated completely from Canada, but these methods have also been found to be expensive. Other methods are being investigated. The United States having similar problems, have concentrated their efforts on developing lower cost methods and breeding trees for resistance to the disease. In Canada most of the activities have been concentrated on the biological and physiological characteristics of the host tree and the diseased patches. Certain types of microcosms have been found in the spores of the trees which are attacked. Further investigations along this line are being undertaken to clarify the nature of the browning, while other research is proceeding to further the understanding of aspects of spore physiology in the hope of effecting control through inoculation to prevent the disease. One day, we may be able to eliminate the disease effectively and economically.

Air Tanker to Fight Forest Fires. In 1963 alone, in the forest fire season, there were over 7,000 fires reported in Canada. Foresters are constantly trying to improve their old ways of fire control and are finding new ways. One of these is the air tanker.

In 1960, in British Columbia, a Martin Mars, a large, four-engined military flying boat, was converted to a water bomber. The aircraft has a large water tank divided into four compartments, with a total

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[2] "Finding Forestry Facts," by Charles W. Mattison. Reprinted from *Elementary School Science Bulletin*, October 1957.

The Canadian authors wish to thank Mr. Y. Lee for providing additional information for this selection.

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clarify (klar′fī): to make clear, explain, purify.
entomology (en tə mol′ əjē): the branch of zoology that deals with insects.
genetics (jə net′iks): the branch of biology dealing with the principles of heredity and the variation in animals and plants of the same or related kinds.
microcosm (mī krə koz′əm): a little world; a universe in miniature.
pathology (pa thol′ə jē): the study of the causes and nature of disease; unhealthy conditions and processes caused by a disease.
repel (ri pel′): force back, drive back, drive away.
vector (vĕk′tẽr): an organism, usually an insect which carries and transmits disease-carrying organisms.

capacity of 6,000 gallons. As the plane goes on its mission, and accelerates over the water, it picks up water by two retractable probes. Spring loaded doors dispose of any surplus, vents allow the replaced air to escape, and air scoops maintain air pressure in the tank so that quick ejection of water can later be effected.

The most ingenious device is the control system. The pilot does not need to empty the whole capacity in one pass. He can use his judgment, and empty one compartment, or two, or three or all in one pass. And he does not need to press several switches when he wants to empty more than one compartment. One single switch controls them all.

Better Trees Through Genetics—the Selection of Plus Trees. Genetics play an important part in improving forest productivity in terms of quality and quantity. In one of the projects undertaken in British Columbia, individual "plus" trees are selected to serve as the basis for tree-breeding programs. What is a plus tree? A plus tree is the one that appears to be distinctly superior to others on a similar site. The superior characteristics of a plus tree are: (1) It produces 30% to 40% more volume than the individual surrounding trees; (2) It has reached maturity in seed bearing (e.g. for a B.C. Douglas fir, it takes forty to one hundred years); (3) It has a healthy and vigorous crown; (4) It shows rapid growth; (5) It is the tallest among the group; (6) It has a clean and straight stem. In other words, only those superior in terms of volume, quality and adaptation to the environment, are chosen in this research project for tree-breeding. The results are so favorable that this approach is adopted in many parts of Canada.

Developing a White Pine Strain Resistant to Blister Rust. You can always identify the white pines because the needles are in clusters of five—and there are five letters in the word w-h-i-t-e. This also applies to the sugar pine of California, which is also a white pine. Count the letters in s-u-g-a-r. Five again!

White pines have a particularly vicious enemy—the disease called blister rust. Long ago scientists found that the disease spores do not go from one white pine to another; they need an alternate host, either currant or gooseberry bushes. Destroy these bushes near white pine trees and the disease is stopped. This sounds easy, but it is a very expensive and tedious job.

Well, foresters aren't satisfied with that. They have found a few—just a few—white pine trees that are resistant to the disease. Starting with these few trees, the Forest Service and other public agencies in the United States and Canada are trying to develop a resistant strain of white pine that will still have good timber quality.

The Manufacture of Particle Board. The term "particle board" is new. It describes a structural board composed of small pieces of wood held together by a strong adhesive. These pieces of wood can be splinter-shaped or flake-shaped. Particle board is not to be confused with fiberboard which is held together essentially by the adhesive forces between the fibers.

The particle board industry has grown rapidly in recent years in many parts of the world, especially in countries where wood is not plentiful, for the raw products consist mainly of low grades of round wood and wood residues. In Canada, after careful experimentation at forest laboratories, the particle board industry is also growing. This represents one of the many attempts being made in Canada to utilize to the full one of our main natural resources, forests.

Forest Products Research Laboratory. Canada's forest industries are increasingly dependent on research, for research is extremely important in the development of wood products that can compete in the world market. One recent study has investigated mechanical stress-grading to determine the stress-strength relationships of Canadian lumber. Another is searching for a fire-retardant treatment for cedar shingles that will also stand up to weathering. Research in plywood is continuing to determine how best to peel, dry and glue in the plywood manufacture process.

Can Direct Seeding of Douglas Fir be Improved? During 1923-49, there was a great increase in the direct seeding of Douglas fir in the Pacific Northwest. In 1951 a private company in British Columbia seeded over 700 acres by helicopter, after preparing the area with treated wheat. They found the two-step project highly successful. In 1952 the Research Division of the British Columbia Forest Service conducted a field project, with the operation reduced to only one step. A new chemical known as tetramine was used. Unlike previous chemicals, tetramine could be applied directly to the seed itself with no harmful effects. The findings showed that it repelled rodents and those that persisted in eating the seeds were poisoned. Results also indicate that if the seedlings of the experiments do become established, there may be approximately three times as many seedlings per acre as on the plot where this method is not used.

Direct sowing of tree seeds is the cheapest way to plant. Foresters, however, still advocate setting out seedlings because it is a simpler procedure for most people and more predictable. But seeding is becoming more foolproof and in another few years should be more generally accepted. Seeding costs about $8.50 per acre compared to $12 per acre for planting seedlings.

Chemistry Preserves Valuable Canadian Wood. Annual loss due to wood rot often runs into millions of dollars. But many of us are not aware of the significance of wood rot in Canada as we are often under the impression that wood rot is found only in climatic conditions more humid than ours. It is true that wood destroying fungi are relatively slow in Canada, but the resultant action is equally destructive. For example, a wooden electrical transmission pole, left standing, can last only 10 years. But with the treatment of chemicals, such as creosote or zinc chloride, the life span of wood products can often be increased three to five times, and this ultimately means a reduced drain on Canada's forest resources.

How to Select and Use Paint. The home owner needs information about house paints in order to select the right type for his purpose. Such information may be obtained from federal and provincial departments of forestry.

Research carried out in the United States over a period of thirty years has grouped house paints into six general types: (1) titanium-lead-zinc paints, (2) titanium-zinc paints, (3) titanium-lead paints, (4) titanium paint, (5) white lead paint, and (6) dark-color paints. This grouping is based on the kinds of pigment used. Information on the advantages and limitations of each type will help the homeowner to decide which one best meets his needs.

Answers can also be found to such painting questions as when to paint, how to tell when the house needs paint, how much paint to apply, and how to detect and remedy paint troubles, such as those caused by moisture, too frequent repainting, and certain types of siding.

A good house paint should be durable enough to last four to six years; it should wear away gradually to insure a good repaint surface and prevent the building up of layers of excessively thick films after several repaint jobs.

Home owners should not repaint too often just to keep the house in shiny new condition. If paint films get too thick, they will break up much faster and costly removal jobs will be necessary before normal paint behavior can be restored.

Scientists Continue Their Search for New Forestry Facts. They can help us reduce wood waste; do better tree planting; improve cutting practices; give better protection to forests from insects, disease, and fire; improve markets; and do the many other things necessary for a better forestry program. But research facts are useless unless they are used by the Canadian people, by both those who own the forest land and those who use its products.

We need more application of research findings in the forests, in the mills, and by the final user of products if our forest lands are to supply sufficient products to continue to cater to the foreign markets. Our forests form part of the natural wealth of Canada, and it is essential that we meet growing demands for this important export.

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

$\frac{\text{No. words}}{\text{No. seconds}}\ \frac{1760}{} \times 60 =$ ____WPM

ACTIVITY 1

Choose eight of the problems which were discussed; state each problem briefly; tell what scientists did about each one, and the result.

Problem: ____________________

What was done about it? ____________________

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Result: ____________________

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Problem: ____________________

What was done about it? ____________________

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Result: ____________________

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Problem: ____________________

What was done about it? ____________________

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Result: ______________________________

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Problem: ______________________________

What was done about it? ______________________________

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Result: ______________________________

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HOW TO READ THE PATTERN IN WHICH A TECHNICAL PROCESS IS DESCRIBED

The pattern in which a technical process is described is one of the most difficult science patterns to read. Usually this type of science material is accompanied by diagrams. Whoever reads this pattern must have skill in interpreting diagrams as well as skill in interpreting the description of the process, and he must continuously refer back and forth from one to the other.

This is not the kind of science material with which you can do speed reading. It requires careful reading, rereading, and time for interpretation and checking of understandings.

The procedure suggested for reading the selection, "How Heating Systems Work," should be helpful to you in reading any science selection of this pattern.

1. First, read the main headings and subheadings in boldface and italics.

2. After reading the introductory explanation, study the first diagram, noting the labeled parts. After studying the diagram look up and try to remember all the things you saw in the diagram.

3. Read the section on "Conduction," one sentence at a time. If a sentence mentions something shown in the diagram, look back at the diagram after reading the sentence. When you are sure that you understand that sentence, read the next one. Stop and think about each sentence after you have read it, to make sure that the meaning is clear to you.

When you have finished reading the sentence, try to explain what you have read to yourself. If you have difficulties, go back and reread those parts that you need in making your explanation complete.

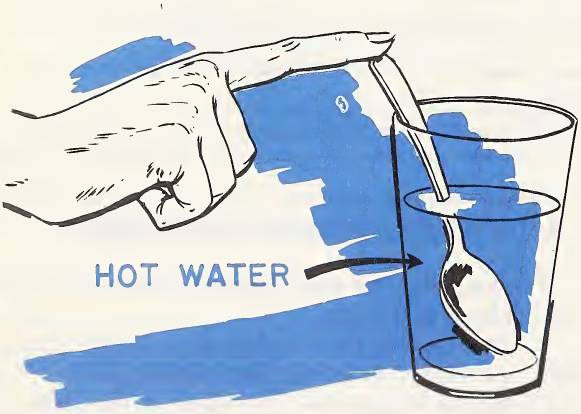
4. Employ the same procedure in reading the remaining sections as you did in reading the first section.

5. Don't try to time yourself in doing this kind of reading.

How Heating Systems Work[3]

Transfer of Heat

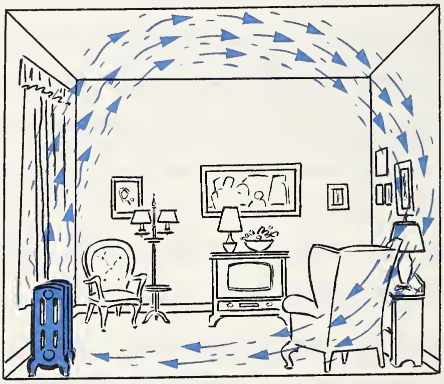
Radiation. Heat can be transferred from one place to another in three ways: by radiation, by conduction, and by convection. In the process of *radiation* a hot object such as the sun, a hot stove, or a fireplace sends out waves of heat energy known as *radiant heat.* All warm things radiate heat; the amount of radiated heat will increase considerably as objects become hotter. Almost all heat that comes to us from the sun comes by this method of radiation. Incidentally, these waves of heat energy travel at the speed of 186,000 miles per second and reach the earth in about eight minutes. Radiant heat waves travel in straight lines and keep going through space and air until stopped by something solid, like your body. Radiated heat will warm up solid objects like buildings or people, but it does very little warming of the air through which it is traveling.

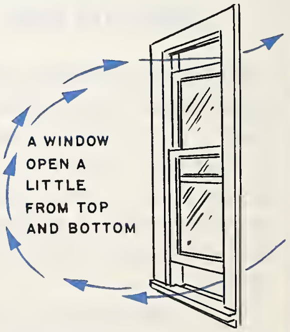


Conduction. In the method of heat transfer called *conduction,* shown above, heat travels *through* some material. Have you ever taken hold of the metal handle of a hot frying pan? The handle got hot by this method of conduction: the heat traveled quickly from the hot pan through the metal to the handle. Metals conduct heat well. If you wanted to avoid burning your hand, you might have wrapped a piece of cloth around the metal handle. This would have protected your hand since cloth is a poor conductor of heat.

Other materials like wood and glass that do not conduct heat well are called *insulators.* Materials such as asbestos, rock wool, and spun glass are all insulators which are useful in building houses. A house whose walls and roof contain heat insulators will hold the heat in and thus keep fuel bills lower in the winter. In the summer an insulated house is more comfortable because in such a house the insulation stops the conduction of a great deal of the outside heat.

Convection. Convection is the kind of heat transfer where the molecules in a material move about freely. You probably know that every substance is made up of tiny parts called *molecules* and that these molecules can move most freely in liquids and gases. Molecules move very slowly in solids, faster in liquids, and very fast in gases. As substances are heated the molecules in them move faster and faster, and the heated substances *expand;* they get larger.




A WINDOW OPEN A LITTLE FROM TOP AND BOTTOM

When liquids and gases are heated the hotter portions expand and become less dense than the cooler portions. The cooler parts, being heavier, are pulled down by the force of gravity, and the warmer parts are pushed upward. In this way liquids and gases can be set in motion, and heat is transferred from one place to another. The movement of such a liquid or gas is known as a *convection current.*

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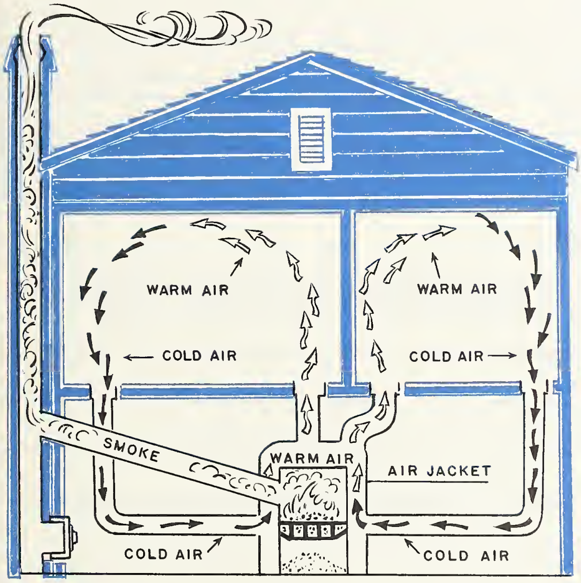
[3] Adapted from material prepared for this book by Maurice U. Ames.

Home Heating Equipment

Man has tried in many ways to keep warm when cold weather made him uncomfortable. The direct heat from fires, such as campfires, was used for thousands of years; later, specially built fireplaces were placed in houses; still later, man burned such fuels as wood or coal in stoves put in key places in his dwellings. With these early methods of direct heating your face could get uncomfortably hot while your back would remain cold. Also, only those who were very near the burning fuel would really get warm.

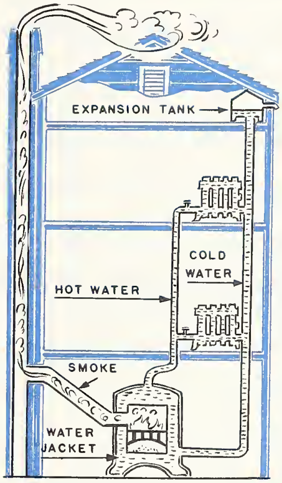
Central heating is the modern way of heating a building. Central heating depends on the circulation of a gas or liquid that has been heated in some central place in the building, usually in the cellar. There are three methods of central heating in wide use in this country: hot-air heating, hot-water heating, and steam heating. All three methods transfer heat mainly by the convection current method.

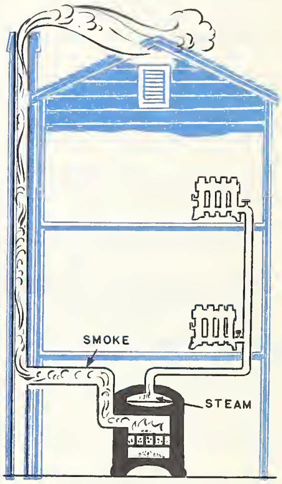


Hot-Air Heating. In hot-air heating, air in the metal jacket around the firebox is warmed, becoming lighter as it expands. The warm air rises through wide pipes called *ducts* to the upper floors, entering each room through an opening in the floor called a *register.* Being warmer than the air already in the room, the heated air rises and sets up a convection current. The cooler air, being heavier, flows down through another floor register into the bottom of the furnace. Here it is heated, and it rises again. Warm air will thus circulate in the rooms in a building as long as the furnace is kept hot by burning a fuel such as coal or oil.

Another method of hot-air heating draws cool air from the outside of the house instead of using the same air again. This method has the advantage of bringing fresh air into the house, but it has the disadvantage of using more fuel.

Two advantages of a hot-air system are that it costs less to install than other central heating systems, and it will warm the house quickly. One big disadvantage is that the air in the house becomes dry, but this fault may be overcome in large measure by placing pans of water in the ducts.





Hot-Water Heating. In the hot-water heating system, circulating hot water is used instead of circulating hot air. There is a water jacket around the furnace. As the water jacket is heated by the fire, the water expands and rises. By the time the hot water has passed through the radiator it has lost most of its heat to the metal of the radiator by conduction. You may have noticed that radiators are made up of several sections of metal. The sectioned arrangement exposes more metal to the air than a simple boxlike structure. Hot radiators warm the air near them. In this way convection currents of air are set up which warm the entire room. Meanwhile, the cooled water flows down a second pipe to the furnace.

Steam Heating. The steam heating system is somewhat like the hot-water system except that the water jacket around the furnace is smaller and only partly full of water. As the water is heated to boiling and some of it turns to steam, the pressure of the steam forces it up through the pipes into the radiators. Each hot radiator warms the air near it, and a convection current of the air in each room is set in motion.

When steam gives up heat to a radiator by conduction, it cools, and this means that a gas changes back to a liquid; in this case steam is changing back to water. This water runs down through the same pipe through which the steam came up. Using the same pipe for both the hot steam and the returning water saves money when the system is installed. However, very large buildings must use two sets of pipes rather than a one-pipe system: one set to carry the steam up to the radiators and the other set to carry the water back to the furnace.

Radiant Heating. Recently a new method of heating homes known as *radiant heating* was developed. In this system there are no radiators. Hot water or steam from a boiler is sent through pipes built into the floors, walls, and ceilings of rooms. Heat radiates from these hot pipes. The advantage of this system is that people in the house can be kept comfortably warm while the air in the rooms does not become overheated. This usually means a saving in fuel bills.

ACTIVITY 1

1. In a paragraph, explain how heat gets from one place to another by radiation:

2. In a paragraph, explain how heat is transferred by conduction:

3. In a paragraph, explain how heat is transferred by convection:

ACTIVITY 2

A. Explain what happens to the air in the hot-air heating system from the time it is warmed until the return of the cool air:

1. ________
2. ________
3. ________
4. ________
5. ________
6. ________

B. Describe how the hot-water heating system works:

1. ____

2. ____

3. ____

4. ____

5. ____

6. ____

C. List the steps in the steam heating process:

1. ____

2. ____

3. ____

4. ____

5. ____

6. ____

7. ____

8. ____

____

____

ACTIVITY 3

Draw and label a diagram of a radiant heating system.

HOW TO READ THE CAUSE AND EFFECT PATTERN IN SCIENCE

Sometimes in science writing you will find selections in which causes of certain things are discussed and the effects of the causes are pointed out. In reading this pattern, simply "spot" each *cause* and its *effect*, and you will get the gist out of the selection. If each cause has just one effect you can often do this simply and quickly by skimming. If, however, each cause has several effects, and you want to know what all of them are, you will have to read carefully for clusters of effects. You will have practice in reading for causes and effects in the first section of the selection that follows.

You will have experience also in taking another step in working with this selection. It contains two patterns of science writing: (1) cause and effect and (2) problem solving. You will need to adjust to each of these patterns.

Often you will find several of the different patterns of science writing within one chapter in a science textbook. You should be able to identify quickly each pattern and then to change your reading approach to the one best suited to the pattern immediately at hand.

There are subheadings in this selection. You will need to pay especial attention to these subheadings.

In reading the selection that follows, the procedure below is suggested.

1. Preview the first section of the selection to find the major causes of erosion and their effects. Then do Activity 1.
2. Preview the second section, adjusting to the problem-solving pattern. Skim to find: (a) the major problem, (b) the smaller problems belonging to the major problem, and (c) the solution to each. Then do Activity 2.
3. Read the entire selection through carefully for the purpose of answering essay-type questions on its content. Timing yourself, read as fast as you can without missing the detailed explanations. When you have finished, do Activity 3.

Erosion [4]

Beginning time: Hr._____Min._____Sec._____

Causes of Erosion

Erosion goes on continuously and it should be the concern of all of us. There is evidence of this process of erosion all about us. Both the small gullies in the side of a nearby hill and the deep canyon of the Frazer River and many other similar gorges represent results of erosion. A muddied river after a heavy rain and a dust storm in a parched area of farmland both are carrying particles of soil from one place to another. Likewise, a creeping glacier in a mountain valley, the pounding waves of the ocean, and an underground river in a limestone cavern are all agents of erosion.

Erosion levels the earth's surface. Essentially, erosion is the natural process that ceaselessly tries to level the earth's surface. If it were not for other forces also constantly at work, the mountains and hills would eventually disappear and all of the land would be under water. Fortunately, however, many areas of the earth's surface are being raised by volcanic action and by balancing movements of the earth's crust. For example, great pressures exerted by the water and sediments on the ocean floor along many shorelines result in forces that cause the land area to be uplifted. Thus erosion never completely succeeds in leveling the earth's surface.

Gravity is influential. The force of gravity is responsible for both the falling of rain from the clouds and for the water running off the land as it always seeks a lower level. Likewise, the great moving currents of air that we call winds are the result of unequal heating of the earth's surface and the convection currents that are set up in the atmosphere. Here again the force of gravity is responsible for the downward movement of the cooler, denser air toward the earth which starts the air moving.

As long as the winds blow and rain falls, erosion will continue to take place. How is erosion useful to man and when does it become a serious problem?

Erosion works with weathering. Erosion works hand in hand with the process of weathering in causing rocks to be broken up and changed into soil. It is the agents of erosion that carry away this newly formed soil and expose fresh rock surfaces to the agents of weathering. Thus new rock surfaces are exposed to the air, to rapid changes in temperature, to the pounding rain and driving wind, to dissolved chemicals in ground water, and to the other agents that help in making more soil. This transported soil often ends up in the fertile river valleys and plains where we find our most productive farm lands. In this process of transporting new soil and minerals from where they have been made to where they can be used, erosion is useful to man.

Winds cause dust bowls and sand dunes. Wind erosion in semi-arid regions may remove millions of tons of fine topsoil from fertile fields. In the wide expanses of the Prairie Provinces dust storms during the long dry spells known as "droughts" have caused tremendous losses and many farms have had to be abandoned. In other areas wind-blown sand forms dunes which may bury fertile farms, forests, and sometimes even towns. It is obvious that erosion by the action of winds is most effective where the soil is bare and unprotected by natural vegetation. Even more effective than winds as an agent of erosion is water.

Rain loosens soil. Rain falling on level land loosens the soil and carries it short distances by the spattering. On the side of a slope, however, such splashing slowly moves the soil downhill. This process of raindrop erosion proceeds quite slowly in comparison with the erosion resulting from streams of water that flow down the hillside as the water runs off. If the soil is loose and not held together by the roots of trees or other plants, small gullies will be visible after even a short rain. We see these gullies along the side of a road where a new cut has been made through a hill. We often see them in a recently planted, sloping lawn. They are also visible in many cultivated hillside fields. If left unchecked, gullies grow larger after each rain or when the winter snows melt and the water runs off the land. Each gully represents valuable topsoil that has been carried away and deposited elsewhere.

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[4] Based on material prepared for this book by Gordon E. Van Hooft.

Running water causes erosion on hillsides. The way in which erosion takes place by running water depends on many factors. The steeper the slope down which the water flows, the faster it flows and generally the more rapidly the soil is washed away. If the topsoil is loose, it will be carried away faster than if it is packed down or held together by vegetation. Erosion takes place more rapidly as the volume of water running over the surface increases. As in the formation of a river valley, the gullies in a hillside become both deeper and wider as the eroding action continues. A gully also grows longer with each rainfall as the water runs into the head and washes in some of the surrounding soil.

Weathering and erosion change valleys. Weathering and erosion in valleys cause large-scale changes in the formation of big river valleys. A river valley tends to deepen as the bed of the river is eroded away. This deepening continues until the river reaches its base level, which is the level of the body of water into which the river flows. Weathering and erosion of the river's banks are going on at the same time, however, and the river generally widens as it deepens to form a V-shaped valley. In areas where weathering takes place rapidly, the shape of the V changes as the widening process "catches up" with the deepening process. Generally, a "young" river is one flowing swiftly through a narrow valley with steep sides, while an "old" river is one flowing slowly through a wide valley with gently sloping sides. In dry climates however, weathering may take place quite slowly and then the deepening process results in deep canyons. Rapids and waterfalls are also characteristic of young rivers, and can often be seen among mountain streams. These eventually disappear as the river bed is eroded. A river such as the Mackenzie River, one of the world's largest rivers, shows at times the characteristics of a young river as some of the currents are so strong that the waters boil and hiss while at other times the broad ribbon of water moves effortlessly across vast plains. The Mackenzie and Frazer Rivers are young rivers even though they have been eroding their way through hard rocks to form canyons for millions of years.

Solutions to an Important Problem Are Being Found

Some erosion, such as that described in connection with river valleys, takes place slowly. The destructive soil erosion discussed in the larger part of this selection, however, goes on rapidly. One of the most important problems facing our country is the conservation of the soil lost by rapid erosion. Scientists have directed their attention to this problem and have found several effective solutions to it.

Cover crops and windbreaks. Experimentation has shown that wind damage can be checked by cover crops and windbreaks. Maintaining a thick cover crop, such as grass for hay, helps to hold the soil together. Planting rows of trees to form windbreaks has been found helpful. Limiting the grazing on pasture lands to the amount of grass that will grow back in a year keeps enough roots in the ground to prevent the soil from blowing away.

Cover crops have also been found to be a solution to erosion caused by water running down steep slopes.

Knowing that water runs rapidly off a steep slope, the agricultural specialist advises the farmer to plant cover crops of hay and small grain on moderate slopes and to use steep slopes for permanent pasture or to plant trees. He is advised to avoid row crops such as corn, beans, and potatoes on slopes where the frequently cultivated soil is easily washed away.

Contour plowing. Contour plowing is another remedy to prevent hill erosion. On farms where much of the land is sloping, the scientist has found ways to slow down the runoff water. One effective method consists of either plowing across the hill, or, still better, following the contour instead of plowing up and down the hill. This is called "contour plowing."

Strip cropping. Strip cropping is also a solution for soil washing away on gentle slopes. It is possible to plant row crops on the side of a gentle slope. The rows should follow the contour of the land, and the crop should be planted in a fairly narrow strip between strips of close-growing crops such as hay or small grains. This strip cropping practice results in a definite slowdown in the process of erosion.

Terracing. The method of terracing hillsides has been practiced for centuries in preventing hill erosion. The stairstep terraces serve to break up the slope of the hill into a series of smaller, more gentle slopes. The result is that most of the water that falls on each terrace soaks into the ground rather than running off.

Check dams. Check dams have been suggested by scientists in reclaiming land which contains many gullies. On slopes where gullies already exist, it is advisable to check further erosion and if possible to cause the gullies to fill in. A series of check dams serve to slow down the runoff water. As the water slows down, any soil being carried tends to be deposited much as the deposition of sediment builds up a delta at the mouth of a river. Frequently, the gullies fill in with soil behind the dams.

Scientific cutting. Forest scientists have worked out plans for cutting trees which prevent erosion. Careful lumbering practices on slopes covered with saw timber are necessary to prevent harmful erosion. If all of the trees are cut and new trees are not planted, the loose cover of humus of the forest floor is easily washed away, and soon deep gullies appear and the process of erosion is under way at a rapid rate. Fortunately, the forest industries of the country are choosing scientifically the trees to be cut and, in so doing, are helping to save the valuable soil.

As we slow down harmful erosion through soil conservation measures, we are also conserving other valuable resources—water, forests, and wildlife. As more water soaks into the soil instead of running off, more is being stored for man's use. To hold the water the slopes of watersheds must be kept well forested. Many such areas have been converted into tree farms and forest preserves. Provided with this abundant cover wildlife can survive and be conserved. Preventing erosion through such soil conservation measures is vital to the future of our country.

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

$\frac{\text{No. words}\ 1720}{\text{No. seconds}} \times 60 = ____$WPM

ACTIVITY 1

After previewing the first section for major causes and effects, write the effects of the causes below.

Causes	*Effects*
1. Generally speaking, erosion is the process which ceaselessly tries	____________________
2. The force of gravity is responsible for	(a) ____________________
	(b) ____________________
3. Erosion together with weathering causes rocks	(c) ____________________
4. Winds cause	____________________
5. Rain falling on level land causes	____________________
6. Running water on hillsides causes	____________________
7. Weathering and erosion in valleys cause	____________________
	____________________
	____________________

ACTIVITY 2

After previewing the second section of the selection, state in a few words the major problem discussed and the chief solutions that scientists have found to combat this problem.

Major problem: ____

Solutions:

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

ACTIVITY 3

After reading the selection carefully, see if you can answer the "thinking" questions below in concise terms.

1. Why should soil erosion "be the concern of all of us"? ____________________

2. How has the knowledge of the causes of soil erosion helped man to act more intelligently in conserving the soil? Explain your answer. ____________________

3. Explain how raindrops can cause erosion. ____________________

4. What is the difference between a "young river" and an "old river" in terms of erosion features? ____________________

5. Explain how trees play an important role in the conservation of soil. ____________________

6. "Preventing erosion through . . . soil conservation measures . . . is vital to the future of our country." Explain this statement. ____________________

In computing your comprehension score, allow 5 for each correct response in Activities 1, 2, and 3.

Comprehension score: ____ WPM: __

HOW TO READ THE "DIRECT STATEMENT OF FACTS" PATTERN

Much reading material in science is concerned with the pattern in which the writer gives the reader detailed facts by the method of simply stating these facts directly. This is done in the selection on the brain that follows. Such selections are similar to the ones with which you worked in Chapter 6 when you were having practice in reading for details, and the same procedures should be used in reading such selections in *science*.

This pattern when used in *science* is usually a difficult one to read. It is often advisable to take notes when studying such a selection and to organize your notes in the form of an outline as you go along. This helps you to see the details in their right relationships.

If a diagram accompanies such a selection, and the diagram gives information not included in the text, then include that information in your outline also. Then you will have all of the facts before you.

The procedure suggested below for reading the selection that follows may serve you well in reading other science material of the "direct statement of facts" type.

1. Preview by: (1) studying the picture, (2) thinking about the title, (3) skimming the boldface headings.

2. Begin your note-taking by writing one of the boldface headings for each of the four main divisions of your outline in Activity 1. The first one has been done for you. (The first two paragraphs in the selection are merely introductory. It isn't necessary for you to take notes on them nor to outline them.)

3. Now read the text under the first boldface head-

ing for the purpose of finding major and minor details. Write these major details in your outline opposite capital letters, and your minor details (if any) under each major detail in Arabic numerals. The first major detail, together with its minor details, has been worked out for you.

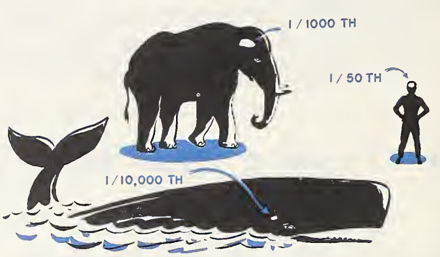
4. Continue until you have read and taken notes on the entire selection.

5. Study your outline for the purpose of remembering the facts as suggested in Chapter 6.

6. Take the test under Activity 3 to see how well you can recall the facts given in this selection.

Jumbo, a famous elephant, weighed 13,000 pounds. Big as he was, his brain weighed only thirteen pounds. The average human brain weighs about three pounds. Jumbo's brain was only one-thousandth of his body weight, but the brain of the average man is about one-fiftieth of his body weight.

A whale's brain is about 1/10,000 of its total body weight.



How Does the Brain Control Behavior?[5]

Not all animals have a brain, and some do not even have any nerves or nerve cells. Such animals are so small that they must be studied under the microscope. The *ameba,* for example, is a one-celled animal. It lives in ponds and moves slowly along dead leaves, picking up its food by surrounding it with its pseudopods, footlike structures. Every time the ameba bumps into a solid object, such as a grain of sand, the whole animal responds by backing away from it. The entire animal responds to the stimulus.

Moving up the scale, we come to animals like the earthworm which, strange as it seems, has a poorly developed brain. This is really a thickened part of the main nerve and is found near the mouth. In fishes, too, the brain is very small, and is concerned chiefly with the work of seeing, tasting, and going after food. Frogs and reptiles also have a fairly simple brain.

The Size of the Brain

Among the mammals, such as the cat, the horse, or man, the brain is very important. The weight of the brain alone is not so important as its weight in proportion to the weight of the body. Our brain weighs about three pounds, approximately 1/50 of a man's weight. An elephant's brain weighs about ten pounds; thus Jumbo's brain was only one thousandth of his body weight. Man's brain occupies a much larger part of his body than does that of the elephant. The whale's brain weighs about fourteen pounds, but this is only 1/10,000 of its total body weight. We see, therefore, that mere size is not the most important thing about the brain.

The Human Brain

Man's brain is so highly developed that it can concern itself with other things besides seeing, smelling, tasting, and hearing. Our brain gives us the power to speak, to understand speech, to remember many things, and to think.

The human brain consists of billions of nerve cells and their fibers. There are three main parts of the brain: the cerebrum, the cerebellum, and the medulla. By far, the largest part is the *cerebrum.* It fills up most of the skull and contains the largest mass of nerve cells in the body. The cerebrum has many deep furrows which provide extra surface area for many more nerve cells. One very deep groove divides the cerebrum into right and left halves.

The *cerebellum* lies in the rear part of the skull, almost under the cerebrum to which it is connected. Many convolutions or "wrinkles" cover the surface of the cerebellum. The bulblike *medulla* lies at the top of the spinal cord, connecting it to the brain.

Functions of the Brain

Many mysteries concerning the work of the brain have been solved by doctors who treat brain injuries. They found that when certain parts of the brain are damaged, definite parts of the body fail to respond: For example, a tumor growing in a certain part of the cerebrum will cause one arm to become paralyzed. It is interesting to note that an injury to the left side of the brain may result in the paralysis of the right side of the body. A severe injury in the back of the cerebrum may result in total blindness, even though the eyes are in perfect condition. Surgeons have been able to locate the exact parts of the brain that control different functions. Different parts of the cerebrum help us to think, to remember, to speak, to move about, and to feel.

---

[5] Eisman, Louis, and Charles Tanzer, *Biology and Human Progress,* Prentice-Hall, Inc., 1953, pp. 58–62.

The cerebellum controls your ability to use your muscles properly, commonly known as "muscular coordination." Athletes must have good muscular coordination in order to win races or ball games. Think of a concert pianist's fingers racing across the piano keys, or the way in which a fast typist works. Each muscle shows perfect teamwork. Our sense of balance, too, is affected by the cerebellum.

The medulla controls our breathing, heartbeat, and blood pressure. The movements of our digestive system are automatically controlled by the medulla. Such reflexes as coughing, sneezing, and vomiting are also centered in the medulla. Injury to the medulla may be fatal, since it controls functions on which life itself depends. We must also keep in mind that the medulla provides the connection between the spinal cord and the brain.

The Importance of Man's Brain

Scientists tell us that our brain does not add nerve cells as we grow; instead, our mental activities keep adding new connections and pathways among the billions of nerve cells of the brain. For this reason, education makes our brain serve us better. A well-trained brain is also necessary to control the human hands as they do the many wonderful things necessary to civilization.

ACTIVITY 1

After skimming the boldface headings, write in one for each of the Roman numeral divisions of the outline below. Then study the text under each heading and make notes of the major and minor details. The sample outline of the first topic should help you. Use a separate piece of paper for B of III, and for all of IV.

I. The Size of the Brain
A. Weight of brain not so important as its weight in proportion to weight of body.
1. Our brain weighs three pounds, which is about 1/50 of our body weight.
2. Elephant's brain weighs ten pounds, but Jumbo's brain was about 1/1000 of his body weight.
3. Whale's brain weighs fourteen pounds, 1/10,000 of its body weight.

II.

A.

1.

2.

3.

B.

1.

a.

b.

c.

2.

3.

III.

A.

1.

2.

3.

ACTIVITY 2

Study your outline for the purpose of remembering it so you can make a good grade on the test that follows in Activity 3. Use the procedure suggested on pages 44-52.

Don't look at the test questions until you are ready to take the test.

ACTIVITY 3

Choose the word or phrase which correctly completes each statement. Write the letter of this word or phrase in the space provided for it.

______ 1. The ratio of the weight of a man's brain to his total weight is:
(a) 1/10,000 (b) 1/1000 (c) 1/50

______ 2. The weight of the brain alone is not as important as:
(a) its size (b) its shape (c) its proportion to total weight

______ 3. The brain consists of:
(a) muscles (b) membranes (c) nerve cells

______ 4. The largest part of the brain is:
(a) medulla (b) cerebrum
(c) cerebellum

______ 5. One of the functions of the cerebrum is to help us:
(a) breathe (b) think (c) sneeze

______ 6. One of the functions of the cerebellum is to control:
(a) memory (b) speech (c) muscular co-ordination

______ 7. Another function of the cerebellum is to control:
(a) feeling (b) sense of balance
(c) thinking

______ 8. One of the functions of the medulla is to control:
(a) heartbeat (b) higher emotions
(c) hearing

______ 9. Another function of the medulla is to control:
(a) will power (b) reasoning
(c) movements of digestion

______ 10. As we grow, the brain:
(a) increases in size (b) adds nerve cells
(c) adds new connections.

HOW TO READ THE EXPERIMENT PATTERN IN SCIENCE

One of the most characteristic writing patterns in science is that of instructions for experiments. Such instructions are detailed and precise. Each one should be read carefully and carried out exactly. If you mispronounce a word, or do not know the meaning of a word, your entire experiment may fail.

Furthermore, after carrying out the directions, you need to note the result carefully, and then draw a conclusion from it. Sometimes you are asked to apply the conclusion to a life situation. All of this requires careful thinking and reasoning.

Procedures are suggested below for reading the science experiments given on these pages.*

1. Read through the set of instructions as a whole, making sure that you fully understand each direction. If there are words of which you do not know the pronunciation or meaning, look them up in a dictionary.

Think about any questions that are asked anywhere in the midst of the instructions, and particularly about any questions or instructions at the end of the set of directions. These will indicate to you the end point toward which you are working.

2. Reread each direction in turn very carefully and carry it out as soon as you have read it.

3. Carefully observe the results, noting *exactly* what happened.

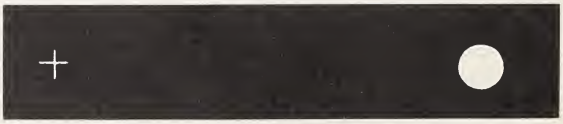
4. Think about the *significance* of what happened. What do the results point out?

EXPERIMENT 1

How good are your sense organs? Did you know that there is a blind spot in every person's eye? Look at the drawing below, keeping the left eye closed and holding the book about twelve inches from your face. Look steadily at the cross and move the book slowly toward the eye until the circle disappears. At this point, the rays of light from the circle are falling on the area where the nerve enters the back of the eye. What is your conclusion?

(a) What did you prove? ______________________

____



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* Eisman, Louis, and Charles Tanzer, *Biology and Human Progress*, Prentice-Hall, Inc., 1953, pp. 93-94.

EXPERIMENT 2

Why are two eyes better than one? Hold the writing part of a fountain pen in one hand, with your arm outstretched. Close one eye. Now try to place the cap on the pen quickly. How well do you succeed? Now try it with both eyes open.

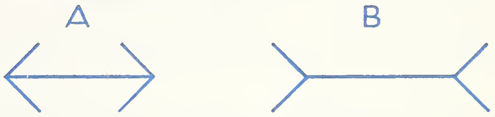
(a) Were you able to place the cap on the pen quickly with one eye closed?

(b) Were you able to place the cap on quickly with both eyes open?

(c) What does this prove?

EXPERIMENT 3

How good are you at estimating size? Which of the horizontal lines below is longer? Test your answer by measuring with a ruler. What is your conclusion?



(a) Which line looks longer?

(b) Which one is longer?

(c) What did your experiment prove?

EXPERIMENT 4

Try this experiment to find out something about methods of study. Read through *Column A* three times. Then, without looking at the book, write as many of the items as you can remember on a sheet of paper. Do the same for *Column B* and for *Column C*.

Column A
Dom
Nol
Zog
Olo
Sig
Vil
Bem
Joz
Vog
Gud

Column B
Art
Mad
Law
Sun
Dog
Joy
Not
Yes
One
Hot

Column C
All
Were
Glad
That
John
Won
The
Game
So
Quickly

(a) What were your results?

(b) What do your results prove?

(c) Why should you be sure that you understand printed information before you try to memorize it?

EXPERIMENT 5

Try the experiment at the top of the next page at home the night after you read it. Answer the questions and draw the diagram the next day.

In preparation for doing the experiment at home, read and reread the directions until you recall *exactly* what you are to do. When you have reached this point, check yourself by writing the directions briefly in your own words on the lines provided for them.

Find the location of different taste sense organs on the tongue—salt, sweet, sour, and bitter. To do this, prepare solutions of salt, sugar, vinegar, and bitter almonds or quinine. Obtain a clean water-color brush. Dip the brush into one of the solutions and apply it to various parts of the tongue—the tip, the sides, and the back—to determine the location of taste for that particular substance. Rinse the mouth and do the same with the other substances.

What conclusions did you reach?

(a) Directions in your own words:

1. ______________________________

2. ______________________________

3. ______________________________

4. ______________________________

(b) What did you find out about locations of different taste sense organs on the tongue? ______________________________

____

____

(c) Draw a diagram on separate paper to show the location of the different taste sense organs on the tongue.

FINDING INFORMATION ABOUT SCIENCE TOPICS

Finding Science Information in Books

Many libraries have books arranged on open shelves. These books are classified by the Dewey Decimal System. According to this system each of ten different subject matter groups is given certain numbers. Science books are always allotted the numbers 500–599. So if you wish to find the group of science books on open shelves, look for the numbers ranging between 500 and 599.

According to the Dewey Decimal System each of the science books has a call number. This number is written or printed inside the cover and on the shelf-back—that is, the part of the book that shows on the shelf.

There is an interesting book called *Rocks, Rivers and the Changing Earth*, by Herman and Nina Schneider. The call number for this book is:

550
Sc
Cop. 4

The number 550 comes within the Dewey Decimal classification for science; the *S* and *c* are the first two letters of the author's last name. *Cop. 4* means this is the fourth copy of this book in this particular library.

Most books in libraries are not on open shelves, so you have to refer to the card catalogue to get the information that is necessary to draw out a certain book.

If you know the name of the author or the title of the book, you should have no difficulty. There are three cards in the card catalogue for most science books: an author card, a title card, and a subject card. On the author's card the author's name comes first; on the title card the title comes first:

550 Zim, Herbert S.
What's inside the earth?
Wm. Morrow, 1952
200 p. illus.

Author Card

550 What's inside the earth?
Zim, Herbert S.
Wm. Morrow, 1952
200 p. illus.

Title Card

If you don't know either the author or title of a book on some particular science topic, then look for the subject card in the card catalog, and skim through the titles on the cards to find some references which you think may serve your purpose. As an example: Suppose that you want to give a report on the life cycle of fish. You may find the general topic of *Fish* in the card catalog and skim through the titles under *Fish* until you come to *Story of the Fish*, by Brian Curtis. No doubt you will want to write the required information on the call slip and draw out this book.

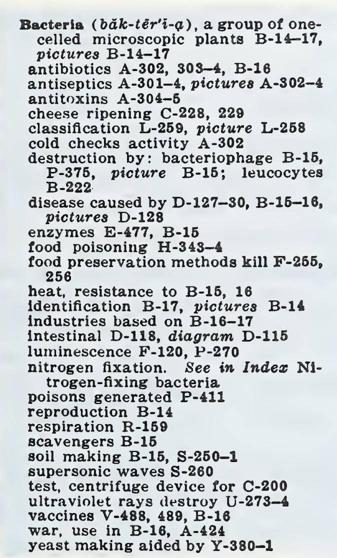
Finding Science Information in Encyclopedias

You can find information on almost any science topic in an encyclopedia. This information will be condensed, but you can rely on the facts given.

Don't make the mistake, however, of looking up the subject *only* in the volume that contains words beginning with the same letter as the topic you are looking up. Read that account, and if you want to do a thorough job, also turn to the index in the back of the encyclopedia and find references to all the other volumes in that particular set of encyclopedias which contain information about the topic of your interest. These references are called *cross references.* Find and read any of them which promise to give you additional information that you may need.

As an example of the use of cross references in encyclopedias, consider the topic *Bacteria* as developed in *Compton's Pictured Encyclopedia.*[6] In looking up this topic in this set of encyclopedias, you will, of course, immediately find *Bacteria* in the volume with *B* on the backbone. Here you will find three pages of general and interesting information about *Bacteria.*

But don't stop with this information given in the *B* volume. Turn to the Fact-Index in the back of the volume. There you will find this helpful list of cross references:



Bacteria (*băk-tēr'ĭ-ạ*), a group of one-celled microscopic plants B-14–17, *pictures* B-14–17
antibiotics A-302, 303–4, B-16
antiseptics A-301–4, *pictures* A-302–4
antitoxins A-304–5
cheese ripening C-228, 229
classification L-259, *picture* L-258
cold checks activity A-302
destruction by: bacteriophage B-15, P-375, *picture* B-15; leucocytes B-222
disease caused by D-127–30, B-15–16, *pictures* D-128
enzymes E-477, B-15
food poisoning H-343–4
food preservation methods kill F-255, 256
heat, resistance to B-15, 16
identification B-17, *pictures* B-14
industries based on B-16–17
intestinal D-118, *diagram* D-115
luminescence F-120, P-270
nitrogen fixation. *See in Index* Nitrogen-fixing bacteria
poisons generated P-411
reproduction B-14
respiration R-159
scavengers B-15
soil making B-15, S-250–1
supersonic waves S-260
test, centrifuge device for C-200
ultraviolet rays destroy U-273–4
vaccines V-488, 489, B-16
war, use in B-16, A-424
yeast making aided by Y-380–1

Glancing through this Fact-Index you find that antibiotics, antiseptics, and antitoxins—all aspects of the bacteria topic—are treated in Volume A; that bacteria's role in cheese-making is treated in Volume C; that classification of bacteria is discussed in Volume L, and so on. So you see that to get all the information that this particular set of encyclopedias has to give you on a science topic, you must follow through the cross-references to several volumes and read the information in all of these references.

In some sets of encyclopedias all of the cross references are given in a separate index volume rather than being placed in sections in separate volumes. All encyclopedias, however, do have a fact-index which gives you references to all volumes that contain information about a given topic, and the pages in these volumes on which the topic is discussed. Develop the habit of being thorough; use cross references in finding out all the information you can about a topic.

Finding Science Information in Periodicals

The most recent information about a science topic can be found in magazines. You can quickly locate the latest information given in magazine articles on a certain topic by using the *Reader's Guide to Periodical Literature.* This is an index to articles which appear in more than 100 magazines. It is published twice a month, except during July and August.

In using the *Reader's Guide,* you look for the topic about which you wish to find information. For example: if you want to find the latest information about *Vitamin* B_{12}, you find the topic *Vitamins* in the *Reader's Guide,* then skim through the entries under this heading until you find the *Vitamin* B_{12} references. These, you should jot down on a card or in your notebook, and then look them up in the magazines mentioned.

If you know the name of a certain author who has written an article you wish to read, you can find the reference by looking for the author's name in the *Reader's Guide.*

There are certain magazines which are devoted entirely to science. Those named below are written in popular style and are easy to read:

Nature Magazine
Popular Mechanics
Popular Science Monthly
Science Digest

A monthly science magazine that appears in a less popular style, but rather in a style closer to the writing of scientists, is:

Scientific American

Although all these magazines are published in the United States, they are available from magazine agencies in Canada.

ACTIVITY 1

Write your answer to each of the questions below without referring to the information you have just read on this page and the preceding page.

1. According to the Dewey Decimal System, what are the classification numbers for science books? ________

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[6] *Compton's Pictured Encyclopedia,* Vol. 2, 1957, p. 406.

2. Write an author card for the following book whose call number is 525: *Planet Earth,* written by Rose Wyler and published by Henry Schuman, Inc., in 1952.

3. Write a title card for the book mentioned in 2.

4. In using encyclopedias, where should you look for information on a topic other than in the main article which appears in the volume marked with the first letter of the name of the topic? ______

5. What are the references in this index called? ______

6. Referring to the cross references on *Bacteria,* page 99, in which volume and on what page of the set of encyclopedias would you find information about bacteria in connection with food poisoning? ______

7. Using the same reference mentioned in 6, in what volume and on what page would you find information about poisons generated in bacteria? ______

8. What publication will help you in locating the most recent magazine articles on a topic? ______

9. Name one science periodical that is written in a popular style. ______

10. Name a magazine which is scientific in style. ______

Score: ____

VOCABULARY IN SPECIAL SUBJECTS

Every subject carries with it its own specialized vocabulary. The words in a specialized vocabulary are the basic meaning elements in a particular subject field, and you must understand them in order to read and study the subject with success.

Specialized words are of two types. First, there are the words with which you are already familiar and are accustomed to thinking of in their most commonly-used meaning, but which suddenly come to mean something entirely different when you meet them in a specialized field. For example, you may have been thinking of *chord* as meaning a combination of harmonious sounds produced by striking certain notes on the piano, but when you begin the study of geometry, you find that *chord* means a straight line intersecting a curve. Perhaps you have become accustomed to thinking of *mode* as meaning a popular custom or style. In studying mathematics you find that *mode* is a statistical term meaning the item in a series of data that occurs most often. It may be that you ordinarily think of *radical* as an adjective meaning extreme, as "I don't care for such radical styles." In algebra you find that a *radical* means a root or fundamental part. In history a *radical* is a person who advocates a sudden change in laws and government with the least delay.

Then, there are many, many new and technical terms used in dealing with specific topics, words that have just one meaning which is peculiar to the subject being treated. Examples of such words are: *aureomycin, radiosonde, fission, penumbra,* in science; *filibuster, imperialism, espionage, suffrage, jurisdiction, secession,* in social studies; *synopsis, syncope, epitome, cliché, calligraphy,* in literature; and *polynomial, hypotenuse, coefficient, secant, protractor,* in mathematics.

When you come to a word with a new, specialized meaning, stop and look it up in a glossary or dictionary, and try to use it in some way.

In order to assist you with specialized vocabulary you will find in this book (and in the other books of the BE A BETTER READER series), lists of frequently occurring subject words in science, history, mathematics, and literature. The words in each list are marked for pronunciation, and defined. Sentences with blank spaces in them are to be completed with a word chosen from one of the lists. Thus you have an opportunity to *use* each word as well as to read the definition.

INCREASING YOUR SCIENCE VOCABULARY[7]

The words on pages 101–103 are among those which appear frequently in biology textbooks and science articles. You probably will meet them often in your reading both in and out of school.

No doubt you are familiar with some of these words already. But study their pronunciation and meaning anyhow just to make sure that you are pronouncing them and understanding them correctly.

Say each word to yourself distinctly. Then read the meaning of the word and think about it as it is used in *science.*

adaptation ăd′ăp tā′sh*ŭ*n	Fitness to live in a certain place or to do a certain thing.
Amphibia ăm fĭb′ĭ *ȧ*	Cold-blooded vertebrates including frogs, toads, and salamanders.
assimilation *ă* sĭm′*ĭ* lā′sh*ŭ*n	The conversion of nutritive material into the substance of the body.
aureomycin ô′rē̇ ō̇ mī′sĭn	An antibiotic used to combat infections.
Bordeaux Mixture bôr-dō′	A fungicide used in spraying plants.
calyx kā′lĭks	The exterior green leaves of a flower.
cellular sĕl′ū̇ lẽr	Consisting of cells.
chromatin krō′m*ȧ* tĭn	Material in the cell nucleus which takes dye readily.
chromosomes krō′mō̇ sōmz	Threads of chromatin containing the genes.
contaminate kŏn tăm′*ĭ* nāt	To make food or water unfit to take into the body.
contour plowing kŏn′to͝or	A method of plowing in parallel lines across a slope.
corolla kō̇ rŏl′*ȧ*	The petals of a flower.
cotyledon kŏt′*ĭ* lē′d*ŭ*n	The first leaf or group of leaves developed by a seed plant.
crustacean krŭs tā′sh*ă*n	Any of a class of animals that usually lives in water; including lobsters, shrimp, crabs.
cytoplasm sī′tō̇ plăz′m	The part of a cell that lies outside the nucleus.
dendrite dĕn′drīt	The part of a nerve cell which conducts impulses to the cell body.

Choose one of the words in the column at the left to complete the meaning of each of the sentences below. Write the word in the blank space where it belongs. You may add *s.*

1. The ____________ in the cell does not include the nucleus.
2. The poppy had a beautiful red ____________.
3. The poppy has a ____________ of green, pointed leaves.
4. The scientist was able to see the ____________ in the cell by the use of dye.
5. The crab is a ____________.
6. The farmer sprayed his trees with ____________ ____________.
7. The cactus has made an excellent ____________ to desert conditions.
8. The ____________ of the bean seed consists of two small green leaves.
9. In order for the body to receive adequate nutrition, efficient ____________ is necessary.
10. The set of branches which form the part of a nerve cell that carries impulses is called a ____________.
11. The physician used a popular antibiotic called ____________ in controlling infections.
12. All of our tissues are ____________.
13. The farmer had hilly land. He used a method of plowing called ____________ ____________.
14. Frogs belong to the class called ____________.
15. Garbage thrown in a river will ____________ the water.
16. Threads of chromatin that contain the genes are called ____________.

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[7] Definitions and sentences on pages 101–103 were prepared by Paul Panes.

enzyme	ĕn′zīm	A substance made in glands and causing chemical changes, as in food.
extinct	ĕks tĭngkt′	Having died out, dead.
gene	jēn	One of the particles in a cell, controlling inheritance of traits.
germinate	jûr′mĭ nāt	To start to grow.
hemoglobin	hē′mȯ glō′bĭn	An iron-rich protein found in red blood cells.
incubation	ĭn′ku̇ bā′sh*ŭ*n	The process of hatching a bird out of an egg.
inoculation	ĭn ŏk′u̇ lā′sh*ŭ*n	Introduction of microbes into the tissues to prevent disease.
internode	ĭn′tẽr nōd′	The space between the nodes or joints of a jointed stem.
lacteal	lăk′tė *ă*l	A small lymph vessel which absorbs fats.
legume	lĕg′ūm	A plant bearing fruit in pods, such as peas and beans.
marijuana	măr *ĭ* wä′n*ȧ*	A drug having a narcotic effect.
metabolism	mĕ tăb′ȯ lĭz’m	The process of building up, repairing, or destroying cells.
metamorphosis	mĕt *ȧ* môr′fȯ sĭs	Change in the form of an animal, as when a tadpole becomes a frog.
mollusk	mŏl′*ŭ*sk	A soft-bodied invertebrate usually with a shell outside the body.
mycelium	mī sē′lĭ *ŭ*m	A mass of threadlike elements forming the vegetative portion of fungi.
Myriapoda	mĭr′ĭ ăp′ȯ d*ȧ*	A group of arthropods of which the centipede is an example.
Neanderthal	nė ăn′dẽr täl	Pertaining to a type of prehistoric man who lived in Europe during the Stone Age.
neuron	nū′rŏn	A nerve cell and its processes.
neutralize	nū′tr*ă*l īz	To destroy or counteract peculiar properties.
node	nōd	A joint of a stem, or a point of intersection of a leaf or leaves; buds customarily grow from nodes.

17. The seeds have been kept moist and warm. They will soon ____________.
18. Rosemary saw a new bud bursting out at a ____________ of her geranium plant.
19. Inheritance of traits is controlled by ____________.
20. Prehistoric animals are now ____________.
21. The ____________ period for a hen's egg is three weeks.
22. Digestive glands manufacture substances that are called ____________.
23. Mr. Johnson had a field of beans and a field of peas. He liked to raise ____________.
24. Mrs. Brown was afraid of getting typhoid fever, so she had an ____________.
25. Mr. Skinner took pills containing iron because his blood was low in ____________.
26. John was interested in all that happened in building up, repairing, and destroying cells. He wanted to know about ____________.
27. A vessel that absorbs fats in the body is called a ____________.
28. Smoking ____________ cigarettes is dangerous as it may lead to drug addiction.
29. Botanists call the space between two nodes an ____________.
30. The ____________ man used stone tools.
31. A butterfly undergoes ____________ when it changes from a larva to a pupa.
32. Centipedes belong to a classification of animals called ____________.
33. Salt will ____________ the acid in vinegar.
34. Scientists are able to study a nerve cell with all its processes. Such a cell is called a ____________.
35. The clam, a soft-bodied invertebrate with a shell, is a ____________.
36. The mushroom has a mass of threadlike elements which is called the ____________.

nŭcleus nū′klė *ŭ*s	A round structure in a cell, containing chromatin.
nutrient nū′trĭ *ĕ*nt	Any one of six types of food substances.
osmosis ŏs mō′sĭs	The process by which liquids pass through a membrane.
pancreas păn′krė *ă*s	A gland that makes digestive enzymes, one of which is insulin.
permeable pûr′mė *ȧ* b′l	Allowing the passage of fluids.
pituitary gland pĭ tū′ĭ tĕr′ĭ	A gland which influences growth.
proboscis prȯ bŏs′ĭs	The long snout of an animal.
progeny prŏj′*ĕ* nĭ	Offspring, or descendants.
propagation prŏp′*ȧ* gā′sh*ŭ*n	The production of new plants or animals.
ptomaine poisoning tō′mān	Illness caused by bacterial poison in spoiled foods.
radiosonde rā′dĭ ȯ sŏnd′	An instrument used in weather forecasting.
ruminant rōō′m*ĭ* n*ă*nt	An animal that chews its cud—that is, that chews again what it has swallowed.
stethoscope stĕth′ȯ skōp	An instrument used to hear sounds in the chest.
stomata stō′m*ȧ* t*ȧ*	Small mouthlike openings in lower animals or the epidermis of plants.
supersonic speed sū′pẽr sŏn′ĭk	A speed faster than the speed of sound.
tentacles tĕn′t*ȧ* k′lz	Flexible arms used by the octopus and jelly fish in capturing food.
tourniquet to͝or′n*ĭ* kĕt	A tight binding used to stop bleeding.
Ungulata ŭng′gū l*ā*′t*ȧ*	The group of animals having hoofs.
vestigial vĕs tĭj′ĭ *ă*l	Pertaining to an unused, rudimentary, or undeveloped part.
viscera vĭs′ẽr *ȧ*	The internal organs in the cavity of the body or trunk.

37. The elephant is clever in reaching out and clutching things with his ____________________.
38. A white flower will become green by ____________ if its stem is placed in a green-colored liquid.
39. Susan tried to eat a careful balance of all of the six ____________________.
40. The most important part of a cell is the part that contains chromatin. This part is called the ____________.
41. Mrs. Stevens' body was lacking in insulin. This was due to a disease of the ____________________.
42. A child is not apt to grow normally if something is wrong with its ____________________________.
43. American parents hope their ____________________ will have peace and happiness.
44. Water can pass through cell membranes. The membranes are said to be ____________________.
45. Dr. Thompson used a ____________________ to control the bleeding.
46. Scientists often send a ____________________ up in a weather balloon to gather data.
47. Cows, horses, and camels have hoofs. They belong to the group called ____________________.
48. The octopus captures its food with the use of its ____________________.
49. Cows swallow their food, then rechew it. A cow is a ____________________.
50. Water and gases pass in and out of leaves through openings called ____________________.
51. The jet plane traveled at ____________________.
52. The physician examined Mr. Steel's chest with a ____________________.
53. Luther Burbank made a contribution through the ____________________ of new plants.
54. Fruit flies have a pair of ____________________ or rudimentary wings.
55. Fermented foods gave ____________________ ____________________ to all the people at the picnic.
56. The liver is one of the ____________________.

CHAPTER 11

HOW TO READ HISTORY

This picture represents a section of the field where the Battle of Gettysburg was fought in the Civil War between the North and South of the United States. This battle was fought from July 1 to July 5, 1863, and on November 19 of the same year a national cemetery was dedicated here. It was at this dedication that Lincoln delivered his famous Gettysburg address. Much controversy has arisen since that time as to whether Lincoln read this address or gave it without notes. This selection is a first hand account written in 1926 by a minister who heard the address delivered. His story settles the argument.

SKILLS NEEDED IN READING HISTORY

In reading history you will need to use all of the common skills with which you had practice in the first part of this book: previewing, finding main ideas, grasping details, reading fast, skimming, recalling information. Some of the special skills needed in studying successfully in this field are: making comparisons, following the sequence of events and recalling dates, noting causes and effects, sensing significance of statements, recognizing propaganda, reading critically. You will be shown how to apply common skills and these special skills in reading the history selections that follow on the next few pages.

In reading history or current event articles in magazines or newspapers you usually need to apply only common skills that you use in ordinary reading. When studying in your history textbook, however, you will profit by using special skills as needed in reading different patterns of material for different purposes.

Reading a Popular Selection for Entertainment

The selection written by the man who heard Lincoln's Gettysburg speech is popular in style. The common reading skills will serve you well in reading this selection.

1. Read the article for entertainment. Read it as fast as you can and still gather the general information given. Time yourself.
2. Check your comprehension by answering the questions at the end of the chapter.

He Heard Lincoln Deliver the Gettysburg Address[1]

Beginning time: Hr._____Min._____Sec._____

The battle of Gettysburg had been fought early in July, 1863. Almost up to this period the war had largely gone against the North. After the bloody defeat at Fredericksburg—in which the writer, who had volunteered after his graduation at college, was under deadly fire—President Lincoln remarked to General Meade: "It really would seem as if Providence was against us." The fact was that the North had imagined an easy victory, and quite misunderstood the resolute Southern temper, the gallantry, bravery and prowess of the Dixie men, and the military genius of General Lee. These successes gave such marked significance to the Gettysburg battle. "There," says Pollard in his *Lost Cause,* "the Confederates were within a stone's throw of peace." But the Gettysburg victory, though not very great, was decisive.

Accordingly, it was felt that it should be commemorated in a national manner which would not only honor the fallen heroes but also encourage and strengthen the cause of the Union. The ceremony was arranged for the nineteenth of November, 1863, to dedicate a part of the field as a national cemetery. Edward Everett, the foremost orator in the United States, was chosen to deliver the principal oration. President Lincoln was asked to close the ceremony with a brief address dedicating the cemetery.

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[1] Rememsnyder, Irving B., "He Heard Lincoln Deliver the Gettysburg Address," *The Mentor,* February 1926, pp. 58–59.

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commemorate (kŏ mĕm′ô rāt): To call to memory by a celebration.
dedicate (dĕd′ĭ kāt): To devote to sacred uses.
seminary (sĕm′ĭ nĕr′ĭ): An institution for training for priesthood or the ministry.
theological (thē′ ô lŏj′ĭ kăl): Pertaining to religion.

All Gettysburg, and the country for many miles around, was on a high key of expectancy. And not less the students both of the college and the theological seminary. Much as we had read of famous classical orators, such as Demosthenes and Cicero, and eager as we were to hear Edward Everett, we were far more eager to see the personality that had risen from a log cabin to the Presidency of a great nation.

President Lincoln arrived the evening before. We learned that he was quartered at the house of Colonel Wills, situated on the public square, so we surrounded the house and noisily clamored for him. At last he appeared on the balcony, remarking that as his words at such a time would be widely reported he would defer what he had to say to the morrow's address.

November 19th dawned bright and clear—a perfect day for the ceremonial. An imposing pageant of generals, governors, soldiers, and officials was formed to proceed to the cemetery, located on a gentle hill, just outside the town. At its head rode the President, mounted on so small a horse that his long limbs nearly touched the ground. A platform, perhaps sixty feet square, had been built for the distinguished guests. The crowd kept swelling, until fully twenty thousand people pressed about the platform. Another student and I had taken the precaution to select a favored spot for seeing and hearing.

Mr. Everett fully rose to the occasion. His speech, which was two hours long, was dignified in manner, eloquent, and impassioned in delivery, and was concluded amid great and general applause.

It was then announced that President Lincoln would dedicate the cemetery. He arose calmly, took out his paper and, holding it in both hands, proceeded to read it. An intense silence gripped the vast gathering. Every sentence phrased some vital feature of the conflict. It seemed to rise higher and higher, until it reached the eloquent climax, which he pronounced with especial emphasis, "that we here highly resolve that these dead shall not have died in vain; that this nation, under God, shall have a new birth of freedom, and that government of the people, by the people, for the people, shall not perish from the earth." The address was so brief, and the audience was held by such a spell, that for an instant profound stillness reigned. Then arose an outburst of general applause.

Mr. Everett was the first to speak to the President, "I would congratulate myself," he said, "if I thought I said as much in two hours as you have said in two minutes. Your speech will be remembered long after mine is forgotten." My fellow student, who was from the South, said, "Mighty good for Father Abe. A splendid speech."

Controversy has arisen as to whether President Lincoln read the address or merely held it in his hand. I affirm positively that he held it and apparently read every word of it. And my statement is confirmed by a correspondent charged by a leading paper to photograph the President while delivering the address. He wrote me that he found it impossible to photograph the President as he spoke, for all the while the reader held the paper so that it concealed his face.

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

$\frac{\text{No. words} \quad 810}{\text{No. seconds}} \times 60 =$ ____WPM

COMPREHENSION QUESTIONS

1. Who was the foremost orator in the United States, asked to deliver the principal speech at the Gettysburg ceremony? ____________

2. What was the purpose of this ceremony? ____________

3. What was Lincoln supposed to do at the ceremony? ____________

4. How did the President travel in the parade to the place at which the ceremony was to be held? ____________

5. What kind of a speech did Mr. Everett give? ____________

6. What happened when Lincoln finished speaking? ____________

7. Who was the first to congratulate Lincoln on his speech? ____________

8. What did the student from the South say about Lincoln's speech? ____________

9. What did the writer of the article say in offering his proof of the way in which Lincoln delivered his address? ____________

10. What additional evidence did the photographer give? ____________

Comprehension score: ____ WPM: ____

In the selection that follows you will read about some different theories of government. In order thoroughly to understand these theories you will need to compare one with the other. There is much material of this type in history books and you will find it helpful to use "Making Comparison" procedures in working with such materials. You will have practice in making comparisons while working with this selection on theories of government.

Sensing the significance of statements made in history textbooks is another very important skill that should grow continuously all through high school. Growth in this skill can take place as the result of practice. You will have an opportunity to sense significant statements in the selection that follows.

1. Preview the entire selection by skimming to find (a) what forms of government are discussed, and (b) a brief definition of each form. Then do Activity 1.

2. Then read the entire selection carefully. As you read the details about each one of the theories of government, think about that theory and compare it with the others. What do they have in common? How do they differ?

When you have finished reading and making mental comparisons, do Activity 2.

3. Study the entire selection again carefully to find the one statement about each theory of government which you think is most significant in regard to the way in which that form actually works out. Underline this statement under each heading as you find it.

When you have finished do Activity 3.

Reading to make comparisons and to select significant statements requires careful study. Don't try to do these things under timed reading conditions.

Different Theories of Government [2]

There are many theories of government, and many varying opinions concerning how people should be governed. Some of these ideas may seem strange to us, but each type of government has been considered superior to all other forms by those who had faith in it. Most of these ideas on government have worked out in a different manner from what had been anticipated. The result has been that the names used to describe the various types of government have come to mean something different than they did originally. The only thing that all these theories have in common is that they provide for the government of the people. They differ concerning by whom and for whom the people are to be governed.

Anarchism is the belief that all formal government is an evil. It teaches that there is no need for laws or central authority. It advocates that all property shall be possessed in common and that relations between individuals shall be governed by free agreements. Such agreements would be kept only so long as they were acceptable to the individuals concerned because there would be no power for enforcement. The success of anarchism would then depend upon the character and goodwill of the people. The leading proponent of anarchism was Pierre Proudhon who lived from 1809–65.

Anarchism has come to mean something far different than Proudhon intended. In our own day it means actively attempting to overthrow existing forms of government. The anarchist does not depend upon the ballot box as a means of accomplishing his purpose but resorts to violence and terror. He may try to kill the leaders of the government and to blow up buildings with bombs. The best that can be said of anarchism is that it means a total disregard for law and order. Anarchy is now considered a synonym for confusion or disorder.

Communism is the theory that all property and goods should be held in common and that no individual should be allowed to possess property of his own. This provides not only for the common ownership of the means of production but also for some plan for the equal distribution of what is produced. The main founder of communism was a German named Karl Marx (1818–1883). He believed that all wealth was produced by the working classes and that workers should seize all wealth and all the means of production. All men would be workers, producing according to their varying abilities, and receiving goods and services as they were needed. Because he was certain that his aims were right, Marx taught that it was proper to use almost any method, including force, trickery, and deceit, to achieve his goals. He regarded the existing governments as enemies of the working classes. He believed that the ideal government was a dictatorship of the workers.

Various attempts were made to carry out the ideas that Marx advocated but they did not work out as planned. Hard-working farmers, who after years of toil had managed to acquire some property, were very much opposed to losing their land and cattle and becoming ordinary workers on some huge community farm alongside of other workers who had no ambition and little self-esteem. More and more compulsion became necessary. Daily goals were set both in the factories and on the farms, and all workers were required to achieve their goals. The worker had little or no choice regarding the kind of work he would do. Perhaps he would be required to work in one place and his wife in another. If he refused to accept his assignment, he might be separated from his family and be sentenced to convict labor in some distant mine. As a rule he had nothing to say about the government. In Russia, which is the best-known communist experiment, he found that he was not living under a dictatorship of workers as planned by Karl Marx but under the dictatorship of the Communist party. All decisions were made by the party leaders and eventually by one man at the top. The average citizen did not possess free speech, freedom of the press, freedom to worship as he pleased, or any other rights which are taken for granted in a democracy.

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[2] Written for this book by Wallace Lamb.

anarchism (ăn′ȧr kĭz′m): The theory that all government is evil.
anticipate (ăn tĭs′ĭ pāt): To foresee, to do beforehand.
fascism (făsh′ĭz′m): Belief in complete control of a people by the government.
laissez faire (lĕ′sā′fâr′): A theory of minimum government.
Nazi (nä′tsė): A member of the former National Socialist German Workers' party.
Utopia (ů tō′pĭ ȧ): A place of ideal perfection.

Socialism is the belief that there should be some kind of governmental or collective ownership, and democratic control, of the production and distribution of goods. Seldom has a word been used so broadly and to include such a strange variety of ideas. Proudhon and the anarchists were called socialists by some, while Marx is often regarded as one of the main founders of the socialist movements. But most socialists have not been so extreme in their methods. The average socialist has believed either that the factories should belong to the workers themselves through some cooperative plan or that the government should own and operate certain basic industries such as mines and railroads. He would seek to achieve these ends by legal means rather than to resort to terror, violence, or dictatorship.

Those who are mainly interested in cooperative plans whereby the workers can have their own factories are generally known as utopian socialists. Best known in this group was Robert Owen (1771–1858), a British mill owner. He operated his own factories for the benefit of the workers, building better homes for them, raising wages, providing food at cost and education for their children. He advocated that workers organize themselves into cooperative communities where they would own both the land and the factories. Other socialists advocated similar schemes, but most of the experiments failed.

The socialists who advocated governmental ownership and operation have been much more successful. The best-known experiments have been in Western Europe where socialist political parties have been very strong. They have been able to bring about the government ownership and operation of railroads, mines, broadcasting, and various other businesses. As the result of elections they have controlled the government of Great Britain, France, and various other countries from time to time.

Fascism opposes communism, socialism, and democracy, and it is strongly nationalistic. Fascism was a political movement that began in Italy under Benito Mussolini (1883–1945). This name was derived from the symbol of the organization, a bundle of rods called "fasces" which were carried by ancient Roman officials as a mark of authority. There were two main aims of fascism. In the first place it was strongly opposed to communism, socialism, and even democracy, which Mussolini branded as weak and stupid. Italy was dominated by the Fascist party in much the same way as the Communist party ruled Russia. There were no elections. Each member of the party carried out the orders of someone higher up, with Mussolini at the top possessing the complete power of dictator. The program of Fascists varied from day to day depending upon Mussolini's whims. In the second place fascism was strongly nationalistic; in other words, it sought to make Italy a stronger nation at the expense of other nations. Mussolini built up a large army, talked about the glories of war, and attacked other governments.

The Fascist movement spread into other countries, particularly into Germany, where Fascists were called Nazis. Their leader was Adolf Hitler (1889–1945). The Nazis, like the Fascists of Italy, were very much opposed to socialism, communism, and democracy. They also were very nationalistic, seeking to increase Germany's might by taking advantage of other nations. The only important difference between the German Nazis and the Italian Fascists was that Hitler's followers taught that the Germans were a superior race of people, and tried to exterminate people of other groups, particularly the Jews.

In general, fascism, regardless of the country in which it exists, is based upon the theory that government by a dictator is superior to a government by the people. Fascists believe that quick, decisive action by a strong man at the head of a government possessing all the facts is more advantageous to a nation than the long debates in legislative assemblies. They are willing to sacrifice the rights of the people in order to obtain such action.

Laissez-faire is the theory that, although a certain minimum of government is necessary, that government is best that governs least. This is a French expression which in effect means "let alone." Those who believe in this theory would agree that the government should maintain peace and order, provide for the common defense, and administer justice. But they would not favor government action to regulate business, erect housing, provide minimum wages, and so forth. They would have greater faith in free competition as a means to promote the general welfare. The company that could make the best chair for a reasonable price would prosper, while its less efficient competitors would be forced out of business. The employer, the worker, and the customer would all profit thereby. The only one who would lose would be the manufacturer who made an inferior product. Actually *laissez-faire* did not work out that way. Successful firms gradually became giants against which small business firms could not compete either in price or services. Some of these industrial giants destroyed all competition and the people were at their mercy. It became necessary for the government to pass laws to protect the weak from the strong and to promote the general welfare.

Democracy is the theory that the best form of government is that in which the people govern themselves. They may do so directly as when they meet together in a town or school district meeting. Or they may do so indirectly through elected representatives as is done in provincial or federal governments. Democracy can be found in a monarchy, as in Great Britain, or in a republic such as the United States. The British Commonwealth is a group of democratic countries with strong historical ties and allied under a monarchy.

Democracy is one of the oldest theories of government and its roots extend back to the ancient Hebrews. They were the first believers in monotheism—or one God. Because they all regarded themselves as sons of the same heavenly father, they came to regard each other as equals. By way of Greece, Rome, Western Europe, and the United States the principles of democracy have been presented to all the world.

The basic element in democracy is a belief in the dignity of the individual human being. Each person has certain fundamental rights which all other persons should respect. These rights include free speech, freedom of the press, and freedom to worship God as he pleases. With each such right comes the responsibility to make certain that all other individuals are guaranteed the same right even though their religious belief may seem strange to us and even if we completely disagree with what they say and write. Democracy is opposed entirely to any form of dictatorship, whether it be by one man, a small group, a political party, a class of the population, or any race.

Democracy, like all other theories, has not worked out perfectly in practice. People do not always inform themselves intelligently concerning current issues and they do not always vote to place the best man in public office. They are not always tolerant of citizens of some other religious creed, race, or political view. Our representatives in legislative bodies seem to debate endlessly at times, while dictators make quick decisions. But those who believe in democracy are convinced that these defects can be overcome and that in any case our freedom is our most important possession. Democracy is not only a government of the people, but it is by the people and for the people.

ACTIVITY 1

After skimming the selection, list the names of the six forms of government, and briefly state the main characteristic of each.

Name of Theory	*Chief Characteristic*
1. ______	______ ______
2. ______	______ ______
3. ______	______ ______
4. ______	______ ______
5. ______	______ ______
6. ______	______

ACTIVITY 2

1. What do anarchism and laissez-faire forms of government have in common? ____________________

2. What do socialism and communism have in common? ____________________

3. Contrast fascism with socialism. How do they differ? ____________________

4. In what way does the theory of the utopian socialists differ from that of the socialists who believe in governmental ownership? ____________________

5. How does communism as developed in Russia differ from the theory proposed by Karl Marx? ____________________

6. In what way is communism as developed in Russia like fascism? ____________________

7. What is the basic element in the theory of democracy? ____________________

How does this contrast with fascism? ____________________

8. What are the chief differences between communism and democracy?

   a. ____________________
   b. ____________________
   c. ____________________
   d. ____________________

ACTIVITY 3

Write the statement which you consider to be most significant in regard to the actual working out of each of the different theories of government.

	Theory	*Significant Statement*
1.		
2.		
3.		
4.		
5.		
6.		

Allow a score of 5 for each correct answer. Comprehension score: ____

The history of railways is a fascinating story. One of the interesting incidents told about our early railways has to do with buffaloes in the West. It seems that the first trains traveling in the western part of our country often ran into large herds of buffaloes. Sometimes the passengers shot at them from the windows of the train. This usually frightened them away and cleared the track.

READING TO FOLLOW SEQUENCE OF EVENTS AND GRASP DATES

The type of history material which you meet most often in your textbooks is that in which events are described in sequence as one leads up to the other. Dates are necessary in presenting such content, and it is often necessary to fix these dates in mind.

The selection, "The History of Railways," presents events in sequence and gives dates. A procedure is suggested below for your use in studying this selection. A similar procedure should be of assistance to you in studying any historical material of this pattern.

1. Read the selection carefully, noting the dates as you go along and thinking how each event leads to the next.
2. Complete the time-line in Activity 1. You may refer to the selection while filling in this time-line. Needless to say, you won't be able to use speed reading while working with this selection.

The History of Railways

The first railways, which were only a few miles long, grew until they eventually spanned the continent. Whether they were large or small their pattern was very much the same. The great iron horses followed routes worn earlier by four-legged horses and even earlier by parties of Indians. These pathways were mostly determined by geography, because man has always sought the easiest route to travel. He has found his way across plains and along meandering streams. When confronted by mountains, he has preferred to discover a pass rather than to ascend the peaks or to bore his way through them. In that sense we can say that the routes of our railways were determined to a large extent before man ever existed.

The cars of the first crude trains used in 1836 were drawn by horses. These early railways served only local needs. The first railway was built to carry passengers from the steamers on the St. Lawrence River to those which ran up the Richelieu River to Lake Champlain. Another train was used in Nova Scotia to haul coal from mines.

The First Use of Steam in Moving Trains

The first successful use of steam to move trains was achieved in England in 1829. A locomotive invented by George Stephenson made history when it hauled a train at the rate of 15 miles per hour. Trains were first moved by steam over Canadian railways in 1836. By that date the Champlain and St. Lawrence Railway had completed construction of its tracks from a place opposite Montreal to St. John's, sixteen miles away. The locomotive, splendid with a bell, whistle, cow catcher and a headlight made the first trip in less than an hour. Three years later in 1839 the first locomotive in Nova Scotia made its memorable journey over a four-mile line. The "Samson" hauled guests freely all day from the Albion Mines in Pictou County to New Glasgow. Later that day an ox was roasted whole and was basted with barrels of melted butter to feed these special guests. In the early 1850's Canada's first railway era began. A number of lines were built running north and south through the country. Among them was the Grand Trunk Railway which ran from Sarnia through Toronto and from Montreal to Portland, Maine. By 1860 over two thousand miles of track were laid.

Early Trains Were Lacking in Comfort

Most of the tracks on these early railways were made of wood covered with flat bars of iron spiked on top. Sometimes they would become loosened where they were joined together, and the ends would suddenly shoot up through the wooden floors of the cars. In their snake-like way they would dart or glide in some unexpected direction. It was possible for some unlucky passenger to be impaled with one of these strips. These rails were a constant menace to the safety and the lives of the people on board. Trains carried sledge-hammers to pound the rails back in shape and sometimes the iron snakes had to be sawn off.

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meander (mē an′dər): follow a winding course.

impale (ĭm pāl′): to pierce with.

The early locomotives used wood as fuel and had greedy appetites. Sometimes it seemed impossible to keep an adequate supply of dry wood on hand. Not only were stacks of cordwood kept at every station but local farmers cut and piled wood along the tracks between stations. Trains had to stop frequently as the engine burned a cord of wood every 35-40 miles. To speed their journey the passengers on the train often helped the train crew load wood into the tender. Showers of sparks from the funnel fell on the passengers, the wooden cars and bridges, and the surrounding woods, frequently starting fires. Clouds of smoke also added to the annoyance of passengers, and sometimes boilers would burst.

The early passenger coaches were uncomfortable because of their inadequate springs, hard seats, poor lights, and even poorer heating. Crude couplers, consisting of links of chain with various types of iron bars and pins, were used to attach one coach to another. Brakes also were very unsatisfactory. This could result in an unpleasant experience for the passengers because of the assorted jerks and jounces as each car bumped into the one ahead. There were no signal lights, either green or red, to guide the train crews on their way.

At one time or another, most communities were anxious to be served by the iron horse. Farmers and villagers frequently pooled their savings to invest in railways that might come their way. Sometimes the schemes of the railway builders were successful, causing infant communities to grow into cities, creating factory towns, and bringing prosperity to the citizens. More often the schemes failed, and the communities concerned frequently stood still or declined.

The Expansion of Railways

The expansion of railways across the western part of Canada was made necessary by the promise of the federal government to the province of British Columbia to give them an east-west rail link with the rest of Canada. The Canadian Pacific Railway began to lay tracks in 1881 and completed the first transcontinental railway in 1885.

The early 1900's saw the next boom in railway building. A number of railways such as the Canadian National Railway, the Grand Trunk Pacific, the Ontario Northland, and the Pacific Great Eastern were built during this time. New areas of Canada were opened, the prairies were well supplied with transportation means, and an all-Canadian direct route for shipping grain emerged.

Up to 1914 the vital factor had been the construction of new lines. Now fierce competition among the numerous small railway companies resulted in financial difficulties as each company vied with the others to get business. In 1923 the federal government forced all the railways except the Canadian Pacific to pool their resources and to consolidate as a new second transcontinental railway, the Canadian National. Thus the Canadian National Railway became one of the world's largest experiments in public ownership.

In addition to the cautious expansion of the two great transcontinental lines, the Hudson Bay Railway was built by the federal government. The lines ran from The Pas to Churchill. Although the railway never became an important grain exporting route it did open up a section of northern Manitoba for settlement.

In the 1930's Canada experienced a severe economic depression and the railways were forced to pare their expenses to the minimum. They endeavored to keep all their existing lines operating while waiting for better times financially before expanding further.

Railways Are Threatened by Competition

For a short period of time electric railways appeared as possible competitors in the city areas. A number of electric railways were built from Toronto to several towns near the city but these railways have since been replaced by motor-coaches. In the city itself street cars run by electricity took the place of the horse cars. Many Canadian cities still use some form of transportation which involves electricity to transport residents. It was the automobile and the diesel engine, however, which were responsible for ending the era of electric inter-urban trains.

Since 1930 the railways have been faced with much more serious competition in the way of motor and air travel. Private automobiles, bus lines, trucks, motor freights, and motor express companies multiplied rapidly. These facilities began to handle a larger part of the business previously done by railways. Air travel has been developing rapidly also. At present many people prefer air travel to train travel because it is much faster and in some cases less expensive. A great deal of express and freight is flown by plane.

The railways are suffering greatly at present as a result of automobile and air transportation. They are, however, making many improvements and many people still prefer to travel by train. The great network of railways across the country furnishes the most extensive service in carrying freight, also. In spite of the popularity of air and automobile travel, the railway is still a much-used means of transporting passengers and freight in our country.

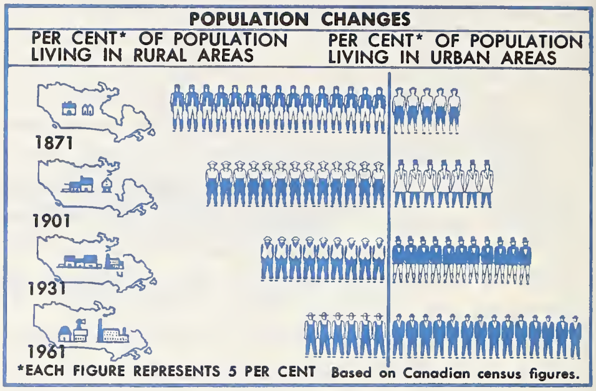
ACTIVITY 1

On the left side of the time-line below are the important dates mentioned in the selection at points appropriate for them. On the right side of the time-line write the event that happened on each date that you have noted. The first event has been written for you.

After you have completed the time-line, see if you can fix it in your memory with the use of some of the techniques suggested in Chapter 7.

1820 — *England first uses steam train*
1829 —
1836 —
1839 —
1850 —
1860 —
1881 —
1885 —
1900 —
1910 —
1923 —
1930 —
1960 —

READING CAUSE AND EFFECT PATTERNS IN HISTORY



This graph shows the effect of the development of industry upon the distribution of rural and urban population in Canada.

What per cent lived in the country

In 1871? ____________ In 1901? ____________

In 1931? ____________ In 1961? ____________

What is the difference in the percentage of people living in cities in 1871 and 1961? Can you account for this? The Selection on "The Rise of Industry and Commerce" explains why we have had these changes in urban or rural areas.

History, above all other subjects, is based upon discussions of causes and effects. Everything that has happened in history has happened because something *caused* it to happen. In fact, history is the record of entire chains of causes and effects. Some cause or causes produce certain effects; the effects in turn become causes and result in other effects, and so on. Possessing skill in grasping these causes and their effects and seeing the relation between them is one of the most valuable assets that a student can have in studying history.

The selection below discusses a chain of causes and effects. First it tells you of several causes that produced the rise of commerce and industry. Then you will find that industry itself became a cause and produced several effects. Finally, you will discover that wealth, one of the effects of industry, becomes a cause and produces effects of its own.

In reading the selection use this procedure:

1. Skim the headings to get an over-all picture of the causes and effects discussed in different sections of the selection. The heading in each case will give you a clue as to whether the section will discuss causes or effects.

2. Read the entire selection concentrating solely on causes and the effect or several effects each produced.

Associate each group of causes with the effects that belong with it.

3. You should be able to grasp these causes and their related effects quite rapidly. Don't bother with details. Just get major causes and effects. "Results" of course means the same thing as "effects." Time yourself.

The Rise of Industry and Commerce[3]

Beginning time: Hr._____Min._____Sec._____

There are no accidents in history. It is impossible to make something out of nothing. History is not made in a vacuum any more than an oak tree is made out of thin air. Every historical movement or event is the result of something that happened earlier just as the oak is dependent upon the acorn, the soil, moisture, and proper weather conditions. And in its turn every such historical movement or event helps to determine the future. This is true of the economic development of Canada and the rise of industry.

Diversity is Strength

Canada's economic strength lies in the diversity and richness of her natural resources, agricultural land and forests, water power, and mineral reserves. Today she ranks as one of the world's greatest trading nations and our people enjoy a standard of living higher than that of most other countries. This achievement is all the more remarkable in view of the smallness of her population, still hardly larger than the single state of California. Agriculture is still the basic industry and accounts for about one third the total value of exports. Fish and fur were Canada's earliest exports and then our forests became the chief source of our wealth, and are today the foundation on which the great lumber, pulp, and paper industries are built. In turn these industries have caused many hydroelectric plants to be built, and led to the establishment of secondary industries ranging from chemicals and plastics to machinery and equipment. There has, however, been a drift from the land to the towns and cities. Industrialization has been the keynote of economic expansion in the last twenty years. Industries connected with natural resources of iron, oil and gas as well as food processing and electronics now employ many workers.

What Caused the Rise of Industry?

The roots of Canadian industry extend backward into the past. One of its main roots is that of invention. Factories could not run without the wheel, which was one of the first inventions, and one of the most important inventions, ever made. They could not run efficiently without thousands of other inventions which have been made as the centuries have passed by. Another main root is the idea of interchangeable parts. This means that instead of making an entire machine, automobile, or rifle as a unit in one factory, largely by hand and at great expense, the small individual parts can be manufactured in separate factories or shops by mass production at a much lower cost. A third main root consists of the discoveries of our scientists who harnessed electricity, found new ways to use petroleum and other natural resources, and unlocked secrets through chemistry. A fourth great root consists of our natural resources. Without iron ore, copper, oil, timber, fertile soil, and similar natural resources, large industries could not exist.

Results of the Rise of Industry

The results of the rise of industry have been tremendous. The lives of each and every one of us have been affected profoundly by the products of factory machines. We have become one of the great trading nations of the world. We also have the benefit of what economists call a "balanced economy," that is, we produce both food and manufactured goods. All sections of our population have benefited. In 1931 the per capita income of the average Canadian was $1,210, but by 1961 this was $4,200, more than three times as much. The people who owned factories or land sometimes became very wealthy: a few became millionaires. But the workers in the factories and industry also benefited. It was not unusual for the workers in the early factories to receive only two dollars a week, consisting of six full days of employment from dawn to dark. Sometimes their wages were given in the form of food. Today the income of Canadian workers for much shorter hours is one of the highest in the world. It is not always easy to compare incomes received in one period of our history with incomes received by some other generation because the value of the dollar varies. Today a dollar will not buy nearly as much as at other times in the past. But despite these variations, the Canadian worker has much more wealth than he possessed before the rise of industry and the great increase in commerce.

As factories have grown and multiplied, the type of work has changed. Before the days of mass production the individual worker might make a manufactured product all by himself, perhaps at his own forge. He could take pride in what he had accomplished. When factories were built and the idea of interchangeable

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[3] Based on material prepared for this book by Wallace Lamb.

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industrialist (ĭn dŭs′trĭ ǎl ĭst): A person owning or managing industry.
monotonous (mȯ nŏt′ȯ nŭs): Without change or variety.

parts was introduced, he made only a part of the finished product himself. He could take less pride than before in what he had accomplished. As factories grew even larger the various parts of the manufactured product were made in different factories, sometimes in various cities. The role that he played as an individual worker became less and less until, in many cases, his work seemed unimportant to him. He found difficulty in feeling pride in a finished automobile if he tightened only a few bolts. The work became boring and monotonous.

Before the rise of industry the worker was often his own boss. If he did not work for himself, he was one of only a few workers who worked directly with or under their employer. The worker and the employer could understand each other's problems. The rise of industry led to a widening chasm between industrialists and labor. The time came when the worker and his employer did not know each other. Sometimes the people who owned the factory lived in faraway cities and their only interest was in profits. In such situations the main concern of the workers was often the size of their paychecks without regard to the welfare of the company. Sometimes the struggle between workers and industrialists led not only to friction but to violence, which frequently harmed the general public as well as it did labor and industry. On the other hand there have been many occasions when workers and industrialists have learned that they need each other and have clasped hands across the chasm. Where there has been harmony between workers and industrialists, there have been generally uninterrupted paychecks and profits.

Another indirect but important result of the rise of industry has been the increase of leisure time and the extent to which the average citizen can make use of it. In the early part of the nineteenth century most workers, whether on the farm or in the factory, had little leisure time. It was not unusual for girls in factory towns in the 19th century to live in dormitories belonging to the company. Besides working from dawn to dark they had little time allowed for meals, they had to retire each night at a set time, and their social life was regulated even on Sunday. Today because of the short work week the average worker, even on the farm, has a considerable amount of leisure time. His employer does not require him to go to bed, get up, or eat at a specified time, or to go to church on Sunday. With his greatly increased income and the varied means of transportation which are readily available, he is relatively free to go where, and do as, he pleases. He has much more time to spend at home, to take his family on an outing at the beach, to devote to the Boy Scouts or to Little League, or to use for literature, music, or more education. On the other hand, he has more time to spend in ways that are useless, or harmful to others.

Results of Increased Wealth

Increased wealth has made possible a greatly improved standard of living for the average Canadian. At first new inventions can be afforded only by the wealthy, but as soon as there is mass production in the factories the prices come down until most Canadians can afford to possess them. At first the automobile was a luxury available only to the well-to-do but today it is regarded as a necessity by the Canadian of average income. Large numbers of our citizens consider it as normal procedure to drive cars costing $3000 to $4000—and to leave them parked on the street overnight, unguarded. Radios, television sets, and air-conditioning units are similar luxuries now within the reach of the Canadian consumer.

The wealth created by the rise of industry has resulted in benefits to art, literature, education, and public health. Canadians have been able to afford paintings and other works of art with the result that great achievements in the fields of art, sculpture, and architecture have been possible. We have also been able to afford books and magazines so that literature has been encouraged. Wealth from the wheels of industry has been used to found colleges, build churches, and encourage research. It has made possible better care for the sick, the mentally ill, the crippled, and all other unfortunates. Thus the rise of industry has made this a better world in which to live.

The wealth created by the rise of industry has also resulted in much that is wasteful and evil. Sometimes Canadian citizens have sought wealth so intensely that their ambitions have become a disease. Sometimes they have become the slaves of wealth rather than its masters, placing more value on the dollar sign than upon what has been the right thing to do. In some cases this has resulted in a general breakdown of public morals, with an increase of selfishness and a failure to respect the rights of others. Poor citizenship is of special importance in our nation because we are a democracy and our government can not be stronger than the individual citizens of whom it is composed. Wealth can be an evil or a blessing—a means or an end. It is up to us to decide which it will be.

	Hr.	*Min.*	*Sec.*
Ending time:	_____	_____	_____
Beginning time:	_____	_____	_____
Total reading time:		_____	_____

$\frac{\text{No. words } 1670}{\text{No. seconds}} \times 60 =$ _____WPM

ACTIVITY 1

Write a brief statement of the causes or effects called for in the outlines below.

Causes	*Effect*
1. ______________________________	The rise of commerce in Canada
2. ______________________________	The rise of industry in Canada
3. ______________________________	
4. ______________________________	

ACTIVITY 2

Prepare additional cause and effect charts on a separate piece of paper.

A. Prepare one chart showing the effects of the rise of industry. Use a format similar to this:

Cause	*Effects*
The rise of industry	1. ______________________________ (Add four more numbers, with appropriate space to accommodate additional *effects.*)

B. Prepare another chart showing the effects of increased wealth, using a format similar to this:

Cause	*Effects*
Increased wealth	1. ______________________________ (Add two more numbers, with appropriate space to accommodate additional *effects.*)

Allow a score of 8.33 for each correct response. Round your total score to a whole number.

Comprehension score: ____

WPM: ____

HOW TO RECOGNIZE PROPAGANDA

Propaganda may be defined as a deliberate attempt to persuade a person to accept a point of view or take a certain line of action. Propaganda always has been a strong force in shaping history, and it still is. You will find propaganda in all types of reading material: billboard ads, handbills, pamphlets, newspapers, magazines, books. You should be able to recognize it wherever you see it.

Propaganda Tricks[4]

Certain common tricks that propagandists use repeatedly in "selling" their viewpoints to others are described below.

1. Name Calling. The amazing Jake Engelhart who did much to build the oil business in southwestern Ontario, was not accepted at first by the local people. At the age of nineteen he came from Cleveland, Ohio, and started an oil refinery in London, Ontario in 1866. Local business men made fun of him, saying that he was "too young to be trusted" and referring to him as "a city slicker from the States." This name-calling had little effect upon Jake. Through hard work he gradually gained universal respect and opened other refineries. In business he helped to organize the Imperial Oil Company, but was also known as a great philanthropist.

2. Glittering Generalities. In the use of this technique "glad words" are used. The names are very desirable and attractive nouns, while the adjectives are extravagant and highly favorable. An example of "glittering generalities" is:

"Mr. James White is a highly respected citizen and philanthropist. He is intelligent, honest, hardworking, and interested in the betterment of our fine city in every way. His gifts to charitable organizations have been most generous. His broad experience has shown him to be a very competent administrator. You could do no better than to vote for James White for Mayor."

This material was prepared for this book by John Heine.

3. Testimonial. In this form of propaganda some famous person or highly respected citizen places his approval back of a person or product by testifying that he uses the product or will vote for the person.

"Thomas Harter will certainly get my vote. I think he is by far the best candidate for Mayor.

(Signed) Harry Jones
Former Alderman"

4. Transfer. This trick is similar to the testimonial except that the writer of the article or ad associates a famous person with something he wants to sell. The famous person doesn't state that he uses the product. The propagandist hopes that the reader will transfer his admiration for the person to the product.

An ad for a hand lotion shows a famous actress working in her garden. The ad says "Movie Star Twinkle likes to keep her hands soft and beautiful." The ad then describes the hand lotion. It doesn't say that the actress uses the hand lotion advertised. The reader is supposed to make that "transfer."

5. Plain Folks. A propagandist sometimes makes an appeal to the "common man" by indicating that the person whom he is trying to influence you to vote for is just an ordinary person.

"Vote for Alex Fairfield, who spent all of his young life working on his father's farm. He understands the working man."

6. Band Wagon. This technique bases its appeal on the assumption that you think if everybody else is doing a certain thing, you should be doing it, too.

"Millions are taking the boat trip up Sunset River. Make your reservation now and join the crowd."

7. Card Stacking. In this form of propaganda only half of the truth is told. Facts that are favorable are presented; those that are unfavorable are withheld. A Russian leader may tell his people that the American people all have to work for the "big capitalists," taking whatever pay they care to give them and being out of work a good share of the times. The high standards of living of working people are not pointed out.

ACTIVITY 1—IDENTIFYING PROPAGANDA TRICKS

Below you will find some examples of propaganda. Decide which trick each example represents. Write a number in the space at the left of each example which corresponds with the number of the trick described above.

_______ A. He is a rank isolationist.

_______ B. Nine out of ten salesmen said they preferred traveling on the Go-Fast Airline. (No mention was made of the fact that only ten were consulted and these ten were "hand-picked.")

_______ C. Think of living in a paradise of flowers and palm trees with other congenial people of your age. Low-cost homes and living in this beautiful village for the retired. Reserve your spacious lot now.

_______ D. Mrs. Van Dusel is one of America's foremost society women. People like Mrs. Van Dusel use Helen Glamour's Cleansing Cream.

_______ E. Everyone is wearing the new style pinch-back coats. We have an excellent selection.

_______ F. "I always drive a Handmacher car. Wouldn't have any other." Signed "Tommy Tenor," a favorite radio singer.

_______ G. John Stoner mows his own lawn, trims his hedge, and dries the dishes for his wife. No liveried servants for him. He lives a simple life even as you and I.

HOW TO READ CRITICALLY

The content of much that you read is the expression of some one person's opinion. This is particularly true in the area of current events which belongs under the category of history. Since we have freedom of the press, writers may express their own thinking on our institutions, our laws, our public officers, and many other matters that people are not permitted to express themselves upon in some of the other countries. As a result we find all sorts of opinions printed on all sorts of topics in newspapers, periodicals, and books. Often these opinions are biased and unsound.

All of this means that if you are to be an expert reader you must learn to read *critically*. In reading a selection critically you do more than simply comprehend the meaning expressed by the printed symbols; you *think* about the opinions expressed, challenge them, agree or disagree with them as you like, test out your own reactions to what has been said by reading further on the subject and by talking with others who know the subject thoroughly. If the topic is one that can be checked in a situation of which you yourself are a part, look into this situation and see if what has been said applies to your own personal experiences.

Try these techniques in reading critically the selection that follows. This selection, "It's Time to Close Our Carnival," was a popular article which appeared in a magazine widely read in Canada. It no doubt influenced many people in their thinking about what we do and should do in our high schools. There are some truths in this article and there are some slants that are somewhat biased.

Do you think that you can evaluate this article fairly? Decide with which of the points you agree? Decide with which points you disagree? Test your thinking on your agreements and disagreements?

1. First, read the selection quickly under timed conditions for general meanings. Then check yourself on comprehension by doing Activity 1.
2. No doubt you will make a good score on the comprehension test taken as directed above. But just comprehending statements in such an article is a very superficial type of reading. You need to *think* about the statements, *evaluate* them, *pass judgment* upon them. In other words you need to read such material *critically.*

So after you finish answering the general comprehension questions, reread the article *critically* using the questions in Activity 2 as a guide to you in making your evaluations.

It's Time to Close Our Carnival [5]

Beginning time: Hr._____Min._____Sec._____

Many a brilliant youngster nowadays finds that his high school is assuming the aspects of a carnival. In one room pretty girls practice twirling batons. The sound of cheers is heard from the football field. The safe-driving class circles the block in automobiles. Upstairs in the chemistry lab Mr. Smith is wearily trying to explain to a few boys that studying science can be fun—but who pays any attention to him?

It is hard to deny that our schools are degenerating into a system for coddling and entertaining the mediocre. The facts of the school crisis are all out in plain sight and rather dreadful to look at. Most students avoid the tough, basic courses. Only a small percentage of them are taking any advanced mathematics; only a few more are studying physics. A modern foreign language is studied by a small number. Millions of Russians are studying English, but only a few thousand Canadians are studying Russian.

The non-matriculation diploma has been devaluated to the point of meaninglessness. Some young people who can barely read at a grade six level are given diplomas which indicate that they have satisfactorily completed the course of study in high school.

Almost every conceivable reason has been offered for this state of affairs. A government official blames the curriculum and demands fewer so-called popular or easy courses.

One group says the students are lazy. Surveys by anthropologist Margaret Mead and by a group of Purdue scientists have shown that most American youngsters avoid taking science subjects because they do not think a scientific career is worth all the effort.

Some say it is the parents' fault. A university dean says, "There is too much parental laxity in requiring that youngsters study and do their homework." A junior high school teacher recently wrote that students "are being smothered with anxious concern, softened with lack of exercise, seduced with luxuries, then flung into the morass of excessive entertainment. They are overfed and underworked. They have too much leisure and too little discipline."

And finally our whole nation has been accused. A professor of chemistry wrote recently: "I am concerned about the easy living in this country. In the past, the leisure class always had some demanding ideal—bravery in war, social grace, or the responsible wielding of power. The only corresponding ideal in our society is being a good guy."

Some of the criticism is the inevitable blowing off of steam which accompanies a democracy's efforts toward self-improvement. Still, the trends cannot be disputed and it would be difficult to deny that few diplomas stand for a fixed level of accomplishment or that great numbers of students fail to pursue their studies with vigor. Even brilliant children are not as advanced in the sciences as their opposite numbers in Europe or Russia. Why?

It may be useful to recall the way our school system developed. Fifty years ago our high schools were almost carbon copies of their European counterparts. They offered a narrow selection of strictly academic subjects.

Modern times changed that. This was the land of equality. The schools began taking not only those who once would have fallen by the wayside for social or economic reasons but also those who would formerly have been excluded for lack of academic aptitude or desire. It was pointed out that even the least intelligent youngster can learn something. A new dream was born in our country.

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[5] Adapted from Wilson, Sloan, *Life*, March 24, 1958. Reprinted by permission of Willis Kingsley Wing. © 1958, by Sloan Wilson. Condensed in *The Reader's Digest*, June 1958.

anthropologist (ăn′thrô pŏl′ô jĭst): One specializing in the study of the natural history of man.
degenerate (dê jĕn′ẽr ĭt): Having sunk to a lower order.
morass (mô răs′): A swamp; an entangling situation.
vulnerable (vŭl′nẽr ȧ b′l): Capable of being wounded.

Instead of trying to find students to fit a rigid curriculum, the schools decided to hand-tailor a course of instruction for each child. If Johnny could not learn mathematics they would teach him woodworking, adjust him to life, make him a better citizen. And they would give him a diploma as fancily lettered as anyone else's.

There was a basic humanity in these changes, and common sense too. Johnny undoubtedly was a better person and a more useful citizen after his four years of high school, even if he did not learn much in academic terms. And the destruction of social and economic barriers to education profited the nation enormously. The schools released a flood of energy and talent such as the world had never seen.

To run the new schools a new breed of educator appeared. Such men as John Dewey and his disciples invented some of the silliest language ever heard (the "total personality" of a child was to be developed through "group psychological engineering"). But they emphasized some things that good teachers have known for centuries—that children learn quicker when they are led to understand and enjoy their studies than when they are made to learn by rote, and that teachers should take the child's entire environment and nature into account in deciding how to teach him.

What went wrong?

In the first place, nobody foresaw how enormously expensive such a school system would be. Already spending more than any other nation on education, we were hardly able to provide the money needed for so much individual attention to so many. Educators as a result were forced to design programs for "the average student." Special courses were provided for those experiencing unusual difficulty, but gifted students were largely ignored.

One by one the traditional spurs to effort were removed. Laws were passed requiring even the dullest students to remain in school until their middle or late teens, and the educators found they could expel almost no one. Soon they discovered that it was less damaging to all concerned to let dullards progress through the grades with their contemporaries than to hold them back and let them disrupt classes of younger children. Automatic promotion, automatic graduation, and report cards on which rarely was heard a discouraging word became the rule, and it was not one which inspired every student to do his best.

Elsewhere, children had more incentive to study hard. In Europe the possession of a diploma has continued to be a social distinction, and the educated man is respected even if he is poor. In the Soviet Union, scientists and technicians are the new aristocrats, and the only way to join their ranks is through academic accomplishment—no Russian boy can entertain the dream of leaving school early and making a million rubles as a salesman. In both Russia and the other European countries the bright student, because he is likely to become an important man, is widely admired by his contemporaries.

By contrast, the Canadian youngster who arrives in school with an honest drive to learn finds himself branded an "odd ball"—a difficult role indeed for most adolescents. Most of the public schools are simply not geared for him. True, he can usually find a chemistry or trigonometry course, and if he is lucky he may find a knowledgeable teacher who will greet him with open arms. But he must also contend with hordes of youngsters just drifting through school, in search of easy roads to high pay and with bland disregard of intellectual values.

A high school youngster is faced with a bewildering choice of subjects, many of which are far easier than physics, mathematics, or a foreign language. He can study budgeting or "band." In some schools he must give time to the study of safe driving and the evils of alcohol. Courses in typewriting and in dancing vie for his time.

A good case can be made for instruction in both driving and budgeting, and there is no reason why a youngster should not be taught dancing if the school has the money and the pupil has the time. But all too often the school provides such courses when it doesn't have the money for adequate courses in chemistry. The schools are becoming increasingly vulnerable to the charge that in trying to do everything for everyone, they are doing almost nothing well.

There is no point in trying to return to the 19th century to find a cure for these ills. No one could seriously suggest now that high schools be restricted to the brilliant few, or to a small social or economic group. What we have to do is recapture the enthusiasm for the great dream we once had, and to pursue it with a better sense of values.

In the midst of the blare of commercial success we must recapture an honest respect for learning. It is one thing for us to glory in the tradition of the pioneer who shouted, "I'm as good as you are," to the whole world of beribboned aristocracy, but it is quite another to allow a callow adolescent to slouch in his jeans and motorcycle jacket in smirking disrespect for a good and earnest physics teacher.

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

$\dfrac{\text{No. words}}{\text{No. seconds}}\ \dfrac{1445}{} \times 60 =$ ____WPM

ACTIVITY 1

Check your general comprehension after reading this article rapidly. Underline the correct answer.

1. The writer says that the high school has assumed the aspect of a
(a) college (b) studio (c) laboratory (d) carnival.

2. One group who criticize the school say students are
(a) ambitious (b) lazy (c) studious (d) deliquent.

3. In comparing the status of our brilliant children in advanced science with their opposite numbers in Europe and Russia, our students are
(a) about equal (b) more advanced (c) not as advanced (d) catching up.

4. The former Canadian plan was to
(a) fit each child to a fixed curriculum (b) let each child make his own curriculum (c) provide schools for all children.

5. One thing that went wrong with the philosophies of our new educators was
(a) they were not sound (b) no one foresaw how expensive such schools would be (c) no one understood the new philosophies.

6. In Russia and other European countries the bright student is widely admired by his contemporaries because he
(a) excels his classmates (b) is apt to become a millionaire (c) is likely to become an important man.

7. In trying to find a cure for the ills there is no point in
(a) giving special attention to the gifted (b) returning to 19th century practices (c) providing education for the dullards.

8. Dancing should be taught in school if
(a) parents demand it (b) teachers insist (c) the school has enough money and the student has time for it.

9. What we have to do to improve the situation is to
(a) restrict our schools to the brilliant few (b) pursue our great dream with a better sense of values (c) put more popular courses in the curriculum.

10. In changing to the "great dream," our schools
(a) offered a "tough" curriculum (b) taught the same courses to all students (c) tried to hand-tailor a course for each child.

Comprehension score: ____ WPM: ____

ACTIVITY 2

Reread the section of the article that discusses the point referred to in each of the questions below. After rereading and thinking very carefully about the point, write your answer to the question. Some of the answers may have to be delayed until you make further investigations.

These answers are not to be scored. They are to be discussed in a class meeting conducted by your teacher.

1. Do you think the first paragraph in the article gives a fair picture of our present-day high schools? ______

Why or why not? ____________________

____

____

2. Is the situation presented in the second paragraph convincing to you? ______ If so, what is its significance? ____________________

____

What proportion of students in your school are taking mathematics, physics, and a foreign language? ______

Do you agree that Canadian schools have degenerated into a system of coddling the mediocre? ________ Why or why not? ____________________

____

3. Do you think the diploma has been devaluated to the point of meaninglessness? ______ Why? ________

____

Is anything being done in your school to prevent students from graduating who have only sixth-grade reading ability?

______ What? ____________________

4. Do you agree that the Canadian youngster who arrives in school with a drive to learn is branded an "odd ball"? ______ Is it true in your school? ______

5. Is it true that a student can choose of his own accord an entire set of "easy" subjects and be graduated? ______

What standards does your school have in regard to courses that are to be taken? ____________________

____

6. Do you know of any school that provides courses in driving and band when it doesn't have enough money for adequate courses in chemistry? ______ Ask your science teacher if he does. Write his answer here. ______

7. If you grant that some of the statements in this article are biased, does the article as a whole have any significance? ______ If so, what is this significance? ______

____

LOCATING INFORMATION IN HISTORY

Books on history have been accumulating ever since the art of printing began. At present dozens of new and interesting books on some aspect of history appear each year. Then there are the many weekly and monthly magazines and daily newspapers that deal with current events and problems. So the sources of information in history are many. Be sure that you know all of them and how to use them.

Reading Maps, Globes, and Atlases

Maps and globes are among your most useful tools in studying history. History always takes place in a geographical setting, and this setting is often the cause of historical events that ensue. If you are skillful in *reading* maps and globes, they will yield a wealth of information to you.

There are maps in your textbooks and reference books, and your teacher has, of course, a globe and wall maps of many different kinds. No doubt your teacher or school library also has an atlas or perhaps several of them. An atlas contains a set of several maps usually representing all countries in the world. With so many important things happening in world history now, reference to an atlas makes the reading of history and current events more meaningful.

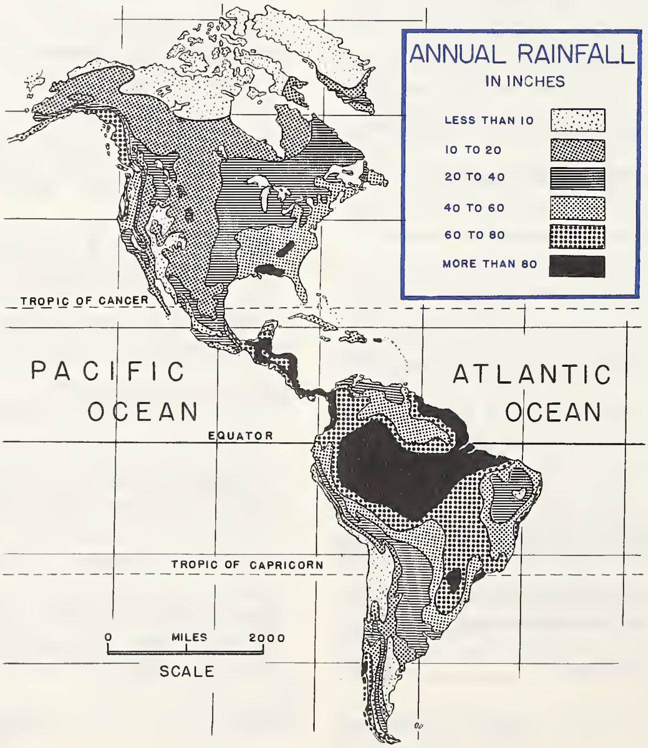
Globes are especially useful at this time because of: (1) our interest in world affairs, and (2) the prevalence of air travel. Globes are read in much the same way that maps are read.

The reading of maps and globes requires several special skills. First, you need to understand map symbols. It is just as important that you interpret a black dot (•) on a map as representing a city as it is to interpret the word symbol *city* as standing for the same thing. The same is true, of course, of symbols for rivers, lakes, boundary lines, and so on.

In addition to these more general symbols each map has its own special symbols. A key to these special symbols accompanies the map. This is called the *legend.* The first step in reading a map is to study this legend carefully so that you will know what the different symbols mean.

Then you need to refer back and forth from the legend to the various types of marked areas on the map, and interpret the map in terms of the symbols shown in the legend. After interpreting the symbols on the map itself, then it is well to think about the *significance* of the information you have gleaned.

See how well you can use map-reading skills in interpreting the map below.



1. What is the subject of the legend? ____________

____

2. What do the numbers opposite the shaded oblongs represent? ____________

3. What distance does the scale of miles represent? ____________

4. Where are the sections of heaviest rainfall, that is, more than 80 inches? ____________

5. Where are these sections located in relation to the equator? ____________

6. What would the equator have to do with this heavy rainfall? ____________

____

7. What part of the United States and Canada has a fairly heavy rainfall area, that is, from 40 to 60 inches? ____________

8. Can you think of any reason why rainfall would be heavier in this area? ____________

____

9. What section of Canada receives the least rain? ____________

10. Can you give a reason why this section receives so little rain? ____________

____

When you find maps in your texts or references *read* them as carefully as you read the one above.

Locating Information in Library Books

Social science books are classified by the Dewey Decimal System between the numbers *300-399*. Social science includes economics, government, and law. History and geography books are arranged between the numbers *900-999*. Many libraries mark individual biographies with the letter *B* and shelve them in a separate section. Collections of biographies, however, are usually classified *920*.

In looking up history books in the card catalog you proceed in the same way as suggested for looking up science books, page 98.

Finding Information in Reference Books

You will, of course, frequently have occasion to look up historical information in encyclopedias. It is especially important that you use the cross references when looking up an historical subject. As an example, consider the topic of *England*. If you look up *England* in the *E* volume of an encyclopedia, you will find a condensed history of this country from the beginning to the present time. But if you want to give a special report on the cathedrals of England, then turn to the cross references for England and under *Cathedrals*, and you will find reference to particular cathedrals described in different volumes. If you are to give a complete report, you will need to look up all of them.

Remember also that when looking up a king or queen in encyclopedias, you use the volume that contains his or her *first* name. Thus if you want to find more information about Henry VIII of the Tudor line, you wouldn't look under *Tudor* but would look in the *H* volume under *Henry*. Here you would find specific information about Henry VIII.

It's a good idea to look up information in several encyclopedias. You have no doubt become familiar with these sets of encyclopedias:

Compton's Pictured Encyclopedia
World Book Encyclopedia

In looking up historical topics you should now be using some of the more advanced general encyclopedias which give longer and more detailed accounts. If you are not familiar with the sets listed below, get acquainted with them:

1. *Encyclopedia Canadiana* (10 volumes)
2. *Collier's Encyclopedia* (20 volumes)
3. *Encyclopedia Americana* (30 volumes)
4. *Encyclopedia Britannica* (24 volumes)
5. *Encyclopedia International*

You will also find the special *history* encyclopedias to be very valuable:

Encyclopedia of American History
An Encyclopedia of World History

If you wish to obtain information about some particular person of historical note, these are also useful:

1. *The Macmillan Dictionary of Canadian Biography*
2. *Dictionary of American Biography*
3. *The Canadian Who's Who*
4. *Who's Who in Canada*
5. *National Reference Book*
6. *The Canadian Parliamentary Guide*

Finding Information in Periodicals

History is being made every day. To find the most recent information a person needs to turn to newspapers and periodicals.

The *Reader's Guide to Periodical Literature, Canadian Periodical Index* will serve you as well in locating current information in the realm of history as in the realm of science.

The World Almanac contains summaries of important events, and statistics in the fields of politics, economics, and current affairs.

Discussion of current events and problems can be found in such magazines as *Time; Life; Look; Senior Scholastic, Social Studies Editions; World Week; Scholastic; Saturday Night; Maclean's; World Affairs.*

ACTIVITY 1

Write T or F to the left of each statement according to whether it is true or false.

______ 1. An atlas contains historical accounts of kings and queens.

______ 2. The legend on a map is a short story telling about the country shown.

______ 3. One of the reasons why globes are especially useful at this time is because of our interest in world affairs.

______ 4. The Dewey Decimal System number for social science books is 300-399.

______ 5. If you were looking up the author's card for *March of Democracy* by James Truslow Adams, you would look in the *M* section of the card catalog.

______ 6. One of the more advanced sets of encyclopedias is *Encyclopaedia Britannica.*

______ 7. If you wished to look up detailed information about the life of some one person of historical note, the best place to look would be in a history textbook.

______ 8. The best way to locate magazine articles about a current topic is to look it up in the *Reader's Guide to Periodical Literature, Canadian Periodical Index.*

______ 9. A good place to look for statistics in regard to current happenings is the *World Almanac.*

______ 10. One magazine that is a reference for current events is *Literary Cavalcade.*

Score: ____

INCREASING YOUR HISTORY VOCABULARY [7]

The words below are used frequently in history textbooks at your school level. If you know the pronunciation and meaning of these words, it will be helpful to you in studying these books. Even if you think you know many of these words, do the work just the same. You may find that you don't know the pronunciation or meaning of some of them as used in the special field of history.

Work out the pronunciation of each of these words. Say the word distinctly. Next study the meaning of the word and think about it as used in history.

aggression ă grĕsh′ŭn	A first or unprovoked attack on a country.
alien āl′yĕn	Not belonging or owing allegiance to a certain country; a citizen of another country.
anarchy ăn′ȧr kĭ	Absence of government regulation; a state of society where there is no law or supreme power.
assassination ă săs′ĭ nā′shŭn	A killing by surprise or treacherous violence.
asylum ȧ sī′lŭm	A place of retreat or security.
belligerent bĕ lĭg′ẽr ĕnt	Waging or carrying on war; warlike.
boycott boi′kŏt	Act of refraining from dealings or associations with a person or party.
capitalist kăp′ĭ tăl ĭst	A person who owns or controls property which is used in business.

See if you know the meaning of each of the words as it is used in history. Choose a word to write in each blank space below. Add s or d if needed.

1. After a dictator was overthrown, he fled to a friendly nation for ______________.
2. President Lincoln was shot. He died as the result of ______________.
3. The employees of the shoe factory started a ______________ by asking people to buy no shoes manufactured by the factory.
4. Cyrus Eaton has many business interests from which he has become wealthy. He is a ______________.
5. When a Canadian travels in Italy he is not a citizen of Italy. He is an ______________.
6. In World War I the Germans crossed the frontiers of Belgium in violation of its neutrality. This was ______________.
7. In one of the South American countries a group of people overthrew all government. The country was in a state of ______________.
8. In colonial times certain ______________ tribes of Indians were continuously waging war against the white settlers.

---

[7] The definitions and sentences on pages 122–125 were prepared by Paul Panes and M. D. Jenkinson.

commodity kŏ mŏd′*ĭ* tĭ	An article of commerce, especially one delivered to a transportation company for shipment under tariff.
communism kŏm′u̇ nĭz′m	A system of social organization in which goods are held in common, rather than as private property.
confiscate kŏn′fĭs kāt	To seize or to be forfeit to the public treasury.
contemporary kŏn tĕm′pȯ rĕr ĭ	Living or existing at the same period of time.
covenant kŭv′*ĕ* n*ă*nt	A solemn agreement between nations.
Crusade krōō sād′	Any of the military expeditions undertaken against the Moslems by Christian powers in the Middle Ages.
culture kŭl′t͟u̇r	A particular state or stage of advancement in civilization.
demolition dĕm′ȯ lĭsh′*ŭ*n	Act of destroying or ruining.
doctrine dŏk′trĭn	That which is taught and put forth by a party or sect as true or desirable.
ecclesiastical ĕ klē′zĭ ăs′tĭ k*ă*l	Pertaining to the church, its organization or government.
edict ē′dĭkt	A public notice issued by official or state authority.
embargo ĕm bär′gō	An order by the government prohibiting departure or entry of ships of commerce at ports within its dominions.
empire ĕm′pīr	A group of nations or states united under a single sovereign power.
enactment ĕn ăkt′m*ĕ*nt	The giving of legislative approval whereby a bill becomes a law.
evacuation ė văk′u̇ ā′sh*ŭ*n	Withdrawal of troops or population from a town or territory.
execution ĕk′sė kū′sh*ŭ*n	Act of putting to death as a legal penalty.
exempt ĕg zĕmpt′	Free from some liability to which others are subject.

9. Russia believes that the nation—not its private citizens—should own property. This country practices ____________________.
10. A ____________________ squad entered the city and destroyed many of the buildings.
11. The new government ____________________ the property of the citizens and placed it in custody of the public treasury.
12. Upon several occasions our Minister of External Affairs has conferred with political leaders in other countries in an attempt to settle political disputes through ____________________.
13. Sugar is an important ____________________ in the island of Puerto Rico.
14. The wars fought by the Christians in the Middle Ages to take Jerusalem from the Moslems were called the ____________________.
15. Although many ____________________ leaders favored Confederation, John A. Macdonald was the main spokesman for a united Canada.
16. The ____________________ of the bill which established a new Canadian flag caused much discussion in Parliament.
17. The king issued an ____________________ to the effect that everyone must contribute a tenth of his income to the state.
18. At one time the ____________________ of Rome encompassed the Mediterranean and every civilized land in Europe and Africa.
19. During the war an ____________________ was placed upon enemy ships, which prevented them from entering Canadian ports.
20. The Crusades received unanimous ____________________ support from the Pope and the Church hierarchy.
21. When news of an approaching hurricane was received, there was an ____________________ of the whole town.
22. Lao-Tse taught a ____________________ based on the idea of promoting good relationships with everyone.
23. The Greeks reached a high state of ____________________ for their period in history.
24. Bert was ____________________ from military service because of his health.
25. The criminal was condemned by the court to ____________________.

gladiator glăd′ĭ ā′tẽr	One who fought with a weapon in public for the amusement of others.
graft grȧft	Acquisition of money, position, etc. by dishonest means.
habeas corpus hā′bē̇ ăs kôr′pŭs	A writ to bring a party before a court or judge.
illiterate ĭl lĭt′ẽr ĭt	Unable to read and write.
imperial ĭm pē̦r′ĭ ăl	Pertaining to an empire or emperor.
indemnity ĭn dĕm′nĭ tĭ	Compensation or remuneration for loss.
infiltration ĭn′fĭl trā′shŭn	Act of sending single men or small groups into a territory for political purposes.
inflation ĭn flā′shŭn	Disproportionate and sharp increase in quantity of money or credit relative to goods available for purchase.
insurrection ĭn′sŭ rĕk′shŭn	Act of rising against civil authority or established government.
jurisdiction jo͝or′ĭs dĭk′shŭn	Authority of a sovereign power to govern or legislate within a given sphere.
magistrate măj′ĭs trāt	A judge in a police or county court.
mobilize mō′bĭ līz	To assemble and put in a state of readiness for active service in war.
negotiation nē̇ gō′shĭ ā′shŭn	Communication with another with a view of coming to terms.
nonpartisan nŏn pär′tĭ zăn	Not controlled by parties, or by party interests.
obsolete ŏb′sō̇ lēt	No longer in use.
ordinance ôr′dĭ năns	An authoritative decree or order.
paganism pā′găn ĭz′m	The worship of a pagan people; heathenism.
Parliament pär′lĭ mĕnt	The highest law-making body in certain countries, particularly those of the British Commonwealth.

26. The great emperors of China ruled with supreme authority from their __________ thrones.

27. A writ of __________ __________ was served on the court to bring the union leader before a court.

28. The mayor in one city accepted bribes from a contractor who wanted the job of putting in city sewers. He made money by __________.

29. During a recent period of __________ many goods were overpriced.

30. In Rome the __________ who fought for the entertainment of people was usually a prisoner or slave.

31. With the newer transportation vehicles the covered wagon has become __________.

32. When the Metis decided to rebel, they recalled Louis Riel from exile to help them to __________.

33. There are still a few places in the world where there are no schools, and most of the population is __________.

34. One of the ways to create dissatisfaction with a government is to send in small groups to mix with the citizens and stir up unrest. This technique is called __________.

35. Mr. James doesn't belong to a political party. He is __________.

36. The city provided help to all needy people within its __________.

37. The religion of people who do not believe in the God of the Bible is called __________.

38. There is a city __________ to the effect that trash must not be thrown in the street.

39. The inhabitants of one country rose up against the government. There was an __________.

40. Father Lacombe, missionary-colonizer, was very successful in his __________ with the Indians.

41. If you are taken to court for a minor motoring offence the __________ has the right to determine the punishment.

42. The British __________ passed a law requiring a general election every five years.

43. An unfriendly nation paid __________ to Canada for destroying two of its airplanes.

peasantry pĕz′*ă*nt rĭ	A body of people who till the soil, especially in Europe.
pilgrimage pĭl′grĭ mĭj	A trip, usually to worship.
premier prē′mĭ ẽr	The prime minister or chief officer of a state.
proclamation prŏk′l*ȧ* mā′sh*ŭ*n	That which is publicly announced by an official.
reciprocity rĕs′*ĭ* prŏs′*ĭ* tĭ	Mutual interchange, dependence, co-operation.
reclamation rĕk′l*ȧ* mā′sh*ŭ*n	Act of improving waste lands.
reign rān	The time during which a supreme authority rules.
reinforcement rē′ĭn fōrs′m*ĕ*nt	Additional troops to strengthen the force of an army or ships to strengthen a navy.
resource rē̇ sōrs′	A new or reserve supply that can be drawn upon.
sectionalism sĕk′sh*ŭ*n *ă*l ĭz′m	Undue devotion to interests peculiar to a section of the country.
segregation sĕg′rē̇ gā′sh*ŭ*n	The practice of setting one group apart from the others.
serfdom sûrf′d*ŭ*m	State of being attached to a piece of land and sold with it to any and every purchaser.
society sō̇ sī′*ĕ* tĭ	A community of people who are responsible for the prevailing social order.
subversive sŭb vûr′sĭv	Having a tendency to overthrow, upset, or destroy.
suffrage sŭf′rĭj	The right to vote in political matters.
textile tĕks′tĭl	A woven fabric or a material for weaving.
tyranny tĭr′*ă* nĭ	The government or authority of a harsh, cruel ruler.

44. For centuries people made __________ to worship at the shrine of Archbishop Becket.
45. At one time Mussolini was the chief officer of Italy. His title was __________ Mussolini.
46. The __________ in China live in poor homes and work very hard in raising their crops.
47. For many years before feudalism was abolished, __________ existed in Germany, Poland, and England.
48. In the early twentieth century many women went to prison to demonstrate their belief in __________ for women.
49. The waters of Hoover Dam are drawn upon in the __________ of desert land in the West.
50. When groups of immigrants arrive, they are kept in __________ from others until they have had a medical examination.
51. Many factories in the East manufacture cloth. They are called __________ factories.
52. The mayor and his advisors decided upon a new ruling for the city. The mayor, himself, made the __________ over radio.
53. Canada and the United States have passed mutual laws which lowered tariff rates on some goods going from Canada to U.S.A., and from U.S.A. to Canada. These are __________ tariffs.
54. Our __________ of coal will be exhausted within another century.
55. During the early growth of this nation a feeling of __________ existed among the people of the West, South, and East.
56. William the Red of England was a harsh and cruel ruler. His government could be called a __________.
57. Henry II had a long __________ from 1154–89.
58. Early members of our __________ never dreamed men would be flying in the twentieth century.
59. Trouble was caused in a European country by __________ forces who wanted to overthrow the government.
60. The troops were outnumbered by the enemy. __________ came just in time to save them.

CHAPTER 12

HOW TO READ LITERATURE[1]

Literature! Some students are so frightened by the very name, they believe that if a selection is called "literature" it is marked at once as something old, confusing, and dull. How wrong they are! They have never found the secrets of reading and enjoying good books.

Literature is sometimes old, because the writing was good enough to last through the years—because people of today can find real pleasure and value in it. If it seems confusing, that may be because the reader has never learned how to read and understand anything more ambitious than the daily comics. And, as many good readers find, literature is far from dull—it can be as exciting as life itself.

Reading teachers, English teachers, teachers of literature—they know what enthusiasm students can acquire for "literature." They know too that such enthusiasm grows stronger as the student learns more about the author's craft of weaving stories about interesting characters in various settings, portraying scenes from life, revealing the thoughts and joys and hopes and problems and sorrows of mankind, today or yesterday, near or far away.

To participate in some of the enjoyment found by reading books, you, as a reader, must acquire and develop certain skills in reading. Just as you enjoy seeing a baseball game more when you know the rules and understand the activity, so you will enjoy good books more when you have learned just how to read them—when you have learned the skills necessary in reading and enjoying literature.

In this chapter you will see that literature is what you make it. You will learn that you should *read* literature in a way that is different from the way in which you read science material, mathematics problems, and social studies material. In reading literature, you must note the facts which are presented about people, places, and problems, but you must also think and imagine and wonder about the things that an author suggests and mentions briefly. Some of these things require that your mind search "between the lines" for ideas that you realize by yourself as you read. So the works of literature are, in part, made by you as you read them, and your enjoyment of them will depend upon how well you are able to "get into the act"—to take part in what you read.

"Literature" is merely a term that refers to good things for reading. To different people, there are different measures for judging the good things. Short stories, poems, plays, novels, essays, biographies, speeches—all become part of the world of literature. It's a world you should know and enjoy. This chapter will help you to realize this goal by giving you practice in using special techniques that are needed in reading in this interesting field.

Some of the special skills that you need in reading stories and novels with enjoyment are: interpreting deeper meanings, understanding characters, grasping clues, sensing the significance of a story, enjoying sensory impressions. You will have practice in using each of these skills in reading the stories that follow. You may use several of these in reading any one piece of literature. While developing these special skills, however, you will concentrate upon them one at a time.

In reading an essay the most important skill needed is that of getting the writer's viewpoint. You will also have experience in reading an essay for this purpose in this section.

In reading poetry there are many different things to look for in getting the most enjoyment out of this type of literature. We enjoy different things in different poems. In this chapter you will have experience in reading poetry to appreciate each of these different qualities: the story told in the poem, the music, the description, the humor, and the emotion. As in the case of stories, you may do several of these things in reading any one poem. For practice purposes, however, you will concentrate on one at a time.

HOW TO READ SHORT STORIES

There are several different kinds of short stories, and short stories that are written for different purposes. So one of the first things for the reader of any short story to do is to decide on the purpose which the author had in mind in writing the story. Then read in close communion with him as he travels on toward his purpose. As you read, note the incidents one by one, respond to the emotional atmosphere, watch out for the struggle, and be ready for the outcome. In a nutshell these are reading procedures which apply to stories in general. Some of the more specialized skills will be discussed in connection with the short stories that follow.

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[1] The literary selections in this chapter were chosen by Robert Hilton and Marion Jenkinson, who also prepared some of the introductory material and some of the Activity material.

Interpreting Meaning in a Short Story

To get the most enjoyment out of a story, the reader should be ready to interpret the deeper meanings beneath the actions, thoughts, and expressions of the characters. It is often necessary to fill in with happenings, to figure out situations, to draw conclusions of your own about people and events. Literature demands reading creatively and filling in between the lines. To do this you need to enter into the story as if you were a part of it, live *with* the characters as they have their experiences.

The story that follows was written by O. Henry. Many of O. Henry's stories are about ordinary people in New York City and appear in books like *The Four Million*. Although he died in 1910, O. Henry's stories are still popular today because of their tricks and surprises.

The O. Henry story that follows has both a trick and a surprise in it. You need to do a lot of "reading between the lines," however, in order fully to understand and enjoy this story.

In reading the story do these things:

1. Try to think of the meaning *back* of things said and done.

2. After you've finished reading the story, reread certain parts that will help you to clear up any points that you do not understand about the conclusion.

3. Time yourself on your first reading of this story. When reading for deeper meanings you do not read as fast as when you are reading simply for general impressions or information. At this point in your reading improvement, however, you should be able to read and interpret stories of this type with considerable speed.

Why was this man standing in the dark doorway? Did he intend to commit a robbery? Is the policeman just chatting with him as a friend? Or does he intend to arrest the man?

Let O. Henry tell you the story.

After Twenty Years [2]

Beginning time: Hr._____Min._____Sec._____

The policeman on the beat moved up the avenue impressively. The impressiveness was habitual and not for show, for spectators were few. The time was barely ten o'clock at night, but chilly gusts of wind with a taste of rain in them had well nigh depeopled the streets.

Trying doors as he went, twirling his club with many intricate and artful movements, turning now and then to cast his watchful eye down the pacific thoroughfare, the officer, with his stalwart form and slight swagger, made a fine picture of a guardian of the peace. The vicinity was one that kept early hours. Now and then you might see the lights of a cigar store or of an all-night lunch counter; but the majority of the doors belonged to business places that had long since been closed.

When about midway of a certain block, the policeman suddenly slowed his walk. In the doorway of a darkened hardware store a man leaned, with an unlighted cigar in his mouth. As the policeman walked up to him, the man spoke up quickly.

"It's all right, officer," he said, reassuringly. "I'm just waiting for a friend. It's an appointment made twenty years ago. Sounds a little funny to you, doesn't it? Well, I'll explain if you'd like to make certain it's all straight. About that long ago there

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[2] From: *The Four Million* by O. Henry. Reprinted by permission of Doubleday & Co., Inc.

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absurdity (ăb sûr′dĭ tĭ): A ridiculous idea.
egotism (ē′gō tĭz′m): Conceited reference to oneself.
simultaneous (sī′mŭl tā′nē ŭs): Happening at the same time.
intricate (ĭn′trĭ kĭt): Complicated and hard to follow.
stalwart (stôl′wērt): Strong and brave.
reassuring (rē′ă shoor′ĭng): Restoring a feeling of confidence.

used to be a restaurant where this store stands—'Big Joe' Brady's restaurant."

"Until five years ago," said the policeman. "It was torn down then."

The man in the doorway struck a match and lit his cigar. The light showed a pale, square-jawed face with keen eyes, and a little white scar near his right eyebrow. His scarfpin was a large diamond, oddly set.

"Twenty years ago tonight," said the man, "I dined here at 'Big Joe' Brady's with Jimmy Wells, my best chum, and the finest chap in the world. He and I were raised here in New York, just like two brothers, together. I was eighteen and Jimmy was twenty. The next morning I was to start for the West to make my fortune. You couldn't have dragged Jimmy out of New York, he thought it was the only place on earth. Well, we agreed that night that we would meet here again exactly twenty years from that date and time, no matter what our conditions might be or from what distance we might have to come. We figured that in twenty years each of us ought to have our destiny worked out and our fortunes made, whatever they were going to be."

"It sounds pretty interesting," said the policeman. "Rather a long time between meets, though, it seems to me. Haven't you heard from your friend since you left?"

"Well, yes, for a time we corresponded," said the other. "But after a year or two we lost track of each other. You see, the West is a pretty big proposition, and I kept hustling around over it pretty lively. But I know Jimmy will meet me here if he's still alive, for he always was the truest, stanchest old chap in the world. He'll never forget. I came a thousand miles to stand in this door tonight, and it's worth it if my old partner turns up."

The waiting man pulled out a handsome watch, the lids of it set with small diamonds.

"Three minutes to ten," he announced. "It was exactly ten o'clock when we parted here at the restaurant door."

"Did pretty well out West, didn't you?" asked the policeman.

"You bet! I hope Jimmy has done half as well. He was a kind of plodder, though, good fellow as he was. I've had to compete with some of the sharpest wits going to get my pile. A man gets in a groove in New York. It takes the West to put a razor-edge on him."

The policeman twirled his club and took a step or two.

"I'll be on my way. Hope your friend comes around all right. Going to call time on him sharp?"

"I should say not!" said the other. "I'll give him half an hour at least. If Jimmy is alive on earth he'll be here by that time. So long, officer."

"Good-night, sir," said the policeman, passing on along his beat, trying doors as he went.

There was now a fine, cold drizzle falling, and the wind had risen from its uncertain puffs into a steady blow. The few foot passengers astir in that quarter hurried dismally and silently along with coat collars turned high and pocketed hands. And in the door of the hardware store the man who had come a thousand miles to fill an appointment, uncertain almost to absurdity, with the friend of his youth, smoked his cigar and waited.

About twenty minutes he waited, and then a tall man in a long overcoat, with collar turned up to his ears, hurried across from the opposite side of the street. He went directly to the waiting man.

"Is that you, Bob?" he asked, doubtfully.

"Is that you, Jimmy Wells?" cried the man in the door.

"Bless my heart!" exclaimed the new arrival, grasping both the other's hands with his own. "It's Bob, sure as fate. I was certain I'd find you here if you were still in existence. Well, well, well!—twenty years is a long time. The old restaurant's gone, Bob; I wish it had lasted, so we could have had another dinner there. How has the West treated you, old man?"

"Bully; it has given me everything I asked it for. You've changed lots, Jimmy. I never thought you were so tall by two or three inches."

"Oh, I grew a bit after I was twenty."

"Doing well in New York, Jimmy?"

"Moderately. I have a position in one of the city's departments. Come on, Bob; we'll go around to a place I know of, and have a good long talk about old times."

The two men started up the street, arm in arm. The man from the West, his egotism enlarged by success, was beginning to outline the history of his career. The other, submerged in his overcoat, listened with interest.

At the corner stood a drugstore, brilliant with electric lights. When they came into this glare each of them turned simultaneously to gaze upon the other's face.

The man from the West stopped suddenly and released his arm.

"You're not Jimmy Wells," he snapped. "Twenty years is a long time, but not long enough to change a man's nose from a Roman to a pug."

"It sometimes changes a good man into a bad one," said the tall man. "You've been under arrest for ten minutes, 'Silky' Bob. Chicago thinks you may have dropped over our way and wires us she wants to have a chat with you. Going quietly, are you? That's sensible. Now, before we go to the station here's a note I was asked to hand to you. You may read it here at the window. It's from Patrolman Wells."

The man from the West unfolded the little piece of paper handed him. His hand was steady when he began to read, but it trembled a little by the time he had finished. The note was rather short.

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

ACTIVITY 1

Write your answers to the questions below. See how well you "read between the lines."

1. Was Jimmy any one of the actual characters in the story? ________ If so, which character was he? ________

2. Do you think there was any significance in the fact that Bob was described as having a little white scar near his right eyebrow? __________ If so, what? ________

____

3. Can you give a reason why Bob and Jimmy lost track of each other a year or two after Bob left New York?

____

____

4. Why did the policeman ask Bob if he was "going to call time" on Jimmy? ______________________________

____

5. How do you think Bob had made his money? ____

____

6. Why was he called "Silky" Bob? ______________

____

7. Why was he being arrested? ______________

____

8. What was the "city department" in which the plain-clothes man had a job? ______________

9. What place did the plain-clothes man plan to take Bob for their "long talk"? ______________

10. Do you think it caused the policeman any twinge of conscience to have Bob arrested? __________ Why?

____

____

Comprehension score: ____ WPM: ____

Bob: I was at the appointed place on time. When you struck the match to light your cigar I saw it was the face of the man wanted in Chicago. Somehow I couldn't do it myself, so I went around and got a plain-clothes man to do the job.

Jimmy

No. words $\frac{1250}{} \times 60 =$ ______WPM
No. seconds

SELF-CHOICE ACTIVITIES AND DISCUSSION

Here are some suggestions for further activities and discussion. Perhaps you will wish to engage in some of them.

1. This story would make a good play. Plan how it might be done.
2. If you were giving directions to an artist to paint a scene from this story, what would you tell him?
3. Discuss the things that make a person "a success." Which man in the story was a success? Give your reasons.
4. Sometimes a rereading of a story shows you a great deal about the author's style and cleverness. Point out a number of examples of clever things that O. Henry did in this story.

Understanding Character in a Short Story

In understanding character, which is one of the most important parts of any story, we learn about people through such things as their actions, their speech, their reputation with others, and their description by the author. Becoming keenly aware of these features while reading a story helps the reader to know the characters better, to understand what kind of people they are, and to appreciate the things they say and do.

You will have an opportunity to look for indications of character in reading "Snake Dance." This story was written by Corey Ford. In short stories such as the one that follows, we see how the author uses his cleverness in writing effective literature.

In reading this story you will find that it is mostly about one person, Jerry. From the outset read the story for the purpose of finding out just what kind of a person Jerry is. In this story what Jerry says tells us a lot about his character. Things that he does often give us glimpses of his emotions. Something that the author tells us in the last paragraph enables us to give an over-all evaluation of all the things that Jerry has said and done in the entire story.

1. Read to note indications of Jerry's character. Is he a braggart? Is he given to untruthfulness? Is he conceited, considerate, worried, self-sacrificing? Judge these and other similar characteristics from what he says and does.
2. Time yourself. This is light reading and you should be able to do it rapidly.

Snake Dance [3]

Beginning time: Hr._____Min._____Sec._____

"Hello. That you, Mom? . . . Oh, I'm sorry, operator, I thought I was connected with . . . No, I'm trying to get long-distance . . . What? Centerville, Ohio, twelve ring five, I told that other operator . . . What? . . . I *am* holding it."

He fished nervously in his pocket for a pack of cigarettes, pulled one cigarette out of the pack with his thumb and forefinger, and stuck it swiftly between his lips. He glanced at his watch and scowled. The game had been over for a half hour. The snake dance would be coming down the street this way any minute now. With his free hand he tore a match from the paper safe, and propped the telephone receiver for a moment between shoulder and ear while he struck the match on the flap. As he put the match to the tip of the cigarette, a thin voice rasped vaguely inside the receiver, and he whipped out the match.

"Hello. Mom? . . . Oh, I'm sorry," he mumbled. "How much?" He took a handful of silver from his pocket and began to drop the coins into the slot of the pay telephone. He could hear someone speaking above the echoing reverberations inside the phone.

"What? Oh, Mom? Hello, Mom. This is Jerry. I say, this is—Can you hear me now? . . . Sure, I can hear you fine . . . Sure, I'm all right. I'm fine. And you? . . . That's fine.

"Mom"—and his voice seemed to falter for a fraction of a second. Then: "How is he? Is there any change?"

There was a tiny silence.

"Oh." His voice was a little duller when he spoke again. "I see. Yeh. This afternoon, eh? And that other specialist, he said the same thing? Um-hmm . . . Oh, sure, sure. No, of course, Mom, there's nothing to worry about. No, I'm not worried; I only just called to find out if there was any change, that was all. . . . Did they say if he could ever—I mean, can he move his arms any yet?" He gulped. "Well, that doesn't mean anything, really . . . No, of course, all those things take time. Sure, a year, or maybe even less . . . What?"

He took a second cigarette out of his pocket and thrust it between his lips nervously. He lit it from the stub of the first one and ground out the stub beneath his heel.

"What money? Oh, you mean I sent you last week? Now, Mom," impatiently, "I told you all about that already in the letter, didn't I? . . . Sure it's a scholarship. I got it for playing football. And so naturally I didn't need all that money you and Pop had been saving up for me to go to college, and so I just thought maybe, with Pop being laid up now for a while and all . . .

"Where? Why, right here." He frowned. "No, this isn't exactly a dormitory; it's—I live here in the fraternity house, you see. Sure I'm in a fraternity. It's the one Pop wanted me to join, too, tell him . . . No, honest, Mom, it doesn't cost me a cent for my room. It's on account of my football."

He opened the folding door a little. He thought he could hear the band in the distance.

"Who, me? Homesick? Not so you'd notice it." He laughed. "I'm having the time of my life here. Everybody's so swell. I know practically everybody here at Dover already. They even all call me by my first name. Say, if you don't think I'm sitting pretty, you ought to see my fraternity house here." He gazed out through the glass door of the phone booth.

"Every night the fellows sit around and we drink beer and chew the fat till . . . Oh, no. No, Mom. Just beer. Or usually we just go down to Semple's for a milk shake . . . No, that's only the drugstore . . . No." He smiled slowly. "I promised you I wouldn't drink, Mom."

In the distance now he could hear the sound of the band approaching.

"Well, Mom, I gotta hang up now. The gang'll be here in a minute. We're having a celebration after the game today. We played Alvord—took 'em sixteen to nothing. . . . Sure I did, the whole game; you oughta seen me in there. I made two touchdowns. Everybody's going down to Semple's after the game, and I gotta be ready, because of course they'll all want me to be there too. Can you hear the band now?"

It was growing louder, and the eager voices in the snake dance could be heard above the brasses, chanting the score of the game in time with the band.

"Now, listen, Mom. One other little thing before they get here. Mom, see, I'm going to be sending you about ten or twelve dollars or so each week from now on until Pop is better. . . . No, Mom. Heck, I got plenty. Sure, they always fix you up with a soft job if you're a good enough player. The alumni do it. . . . Here they are now. Hear them?"

The band had halted outside. Someone led a cheer.

"That's for me, Mom. . . . Sure. Didn't I practically win the game for them today? Hear

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[3] Ford, Corey, "Snake Dance," *Liberty,* 1934.

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dormitory (dôr′mĭ tō′rĭ): A building for lodging students.
fraternity (frȧ tûr′nĭ tĭ): A society for men.
alumni (ȧ lŭm′nī): Graduates of a college.
rasp (råsp): To speak harshly.
reverberation (rē vûr′bẽr ā′shŭn): Vibrations of sound.
falter (fôl′tẽr): To hesitate.

that?" He kicked open the door of the phone booth.

He held the receiver toward the open door of the phone booth. They were calling, "Jerry!" "Hey, Jerry, hang up on that babe!"

"Hear that, Mom? Now good-by. And look, by the way, if you should ever happen to see Helen," he added carelessly, "tell her I'm sorry I couldn't ask her up to the freshman dance like I'd planned, but with the football season and my scholarship and all—Tell her, Mom. She—she didn't answer my last letter. O. K., Mom. Tell Pop everything's O. K., see? Now don't worry . . . 'By."

He replaced the receiver slowly on the hook and stared at the mouthpiece a moment. As he opened the door and stepped out of the booth, he could see his reflection for a moment in the tall mirror behind the soda fountain—the familiar white cap, the white jacket with "Semple's" stitched in red letters on the pocket. The crowd was lined along the soda fountain, shouting, "Jerry!" "Milk shake, Jerry!"

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

No. words $\frac{1020}{}$ × 60 = ____WPM
No. seconds

ACTIVITY 2

Write your answers to these questions, basing your thinking upon the actions and speeches of the character, and things that the writer said in the story.

1. What does Jerry's nervousness in the first part of the story tell you about Jerry's character? ____________
____

2. How did the writer show that Jerry was worried about his father? ______________________

3. Was Jerry eager to reassure his mother about his father's recovery? __________ How did he show this consideration for her? ______________
____

4. Was he a boy who kept his promises? __________
Give the reason for your answers. ______________

5. Why did Jerry frown when he said, "Where? Right here," in answer to his mother's question about where he lived? ______________________
What does this tell you about the sacrifice he was making?
____
____

6. Why hadn't Jerry asked Helen up to the freshman dance? ______________ What does this show about his character? ______________
____

7. Why did Jerry enter into all of this deception to his father and mother? ______________
What does that tell you about his character? __________
____

8. What kind of a person did you think Jerry was right up to the last paragraph in the story? ____________

9. What kind of a person did you think he was after reading the last paragraph? ______________

10. Underline the words and phrases below which you think best describe Jerry: considerate, boastful, generous, self-sacrificing, deceitful, egotistical, industrious, cheerful, selfish, untrustworthy, kind to his parents, disrespectful of his parents, true to his promises, a spendthrift.

Comprehension score: ____ WPM: ____

SELF-CHOICE ACTIVITIES

1. Discuss whether Jerry should or should not deceive his mother. Give reasons on both sides.
2. Discuss whether or not the title is suitable.
3. Discuss whether or not the crowd would cheer Jerry? Give the reason for your answer.
4. This story could be used for a radio dramatization. Plan the sound effects, narration, and actual speeches needed.

Reading to Enjoy Description of a Setting

You have no doubt learned in your literature classes that the three basic ingredients in a good story are setting, plot, and character. In most good stories these three elements are balanced and integrated so effectively that you are not aware of any one of them as being predominant. While this is generally true, it is possible for any one of these elements to be predominant in a story, and for one or both of the others to be greatly reduced, or even absent. A description of an interesting and colorful setting, for example, is predominant in the selection you are about to read, and neither plot nor character play any important role at all.

Writers usually use description as a running accompaniment to a story, and they use it for several different purposes: to add to the reader's enjoyment and feeling of reality through the medium of vivid and colorful word pictures; to establish a setting which makes the plot of the story more meaningful; to set a mood for the reader—a mood of quiet, strife, suspense, excitement, dread, anticipation, or pleasure. To achieve these purposes writers use several different devices including simile, metaphor, colorful adjectives, and unique expressions.

Stories that consist almost entirely of description really are not stories, strictly speaking, in terms of the specifications for a story. They make interesting reading, however, in that they enable the reader to share experiences with the writer as he sees, hears, feels, touches, and smells them.

Whether the description is an accompaniment to a plot, or whether the body of the selection itself consists almost entirely of description, you need to be keenly cognizant of description when you meet it and in a state of mind to let it aid you in your enjoyment and understanding. Let the impressions come to you vicariously but strongly through your senses as if you were actually present in the environment.

The piece you are about to read consists almost entirely of description of an interesting setting—a town called Cagliari in Sardinia. The very name Cagliari suggests a strange, exotic, and mysteriously different kind of place. D. H. Lawrence, a famous English writer, once visited this town and wrote about it.

1. Read Mr. Lawrence's description of Cagliari. As you do so, note: (a) his use of all five senses to give you a warm and lively picture of Cagliari; (b) his use of colorful and vivid adjectives; (c) his use of comparison, simile, and metaphor to help you see objects he mentions as they really appear; (d) his use of hyphenated words and unique expressions to add concreteness to the images he presents; (e) his artistic "painting" of word pictures that almost make you feel as if you are really present in the environment, seeing what the author sees as well as feeling what he feels.

2. Do not time yourself in reading this selection. Take time to enjoy the description. If you wish to reread a beautiful or vivid bit of description and pause a moment to think about it, by all means do so.

Cagliari [4]

1. Strange, stony Cagliari. We climbed up a street like a corkscrew stairway. And we saw announcements of a children's fancy-dress ball. Cagliari is very steep. Half-way up there is a strange place called the bastions, a large, level space like a drill-ground with trees, curiously suspended over the town, and sending off a long shoot like a wide viaduct, across above the corkscrew street that comes climbing up. Above this bastion place the town still rises steeply to the Cathedral and the fort. What is so curious is that this terrace or bastion is so large, like some big recreation ground, that it is almost dreary, and one cannot understand its being suspended in mid-air. It is a strange, strange landscape: as if here the world left off. The bay is vast in itself; and all these curious things happening at its head: this curious craggy-studded town, like a great stud of house-covered rock jutting up out of the bay flats: around it on one side the weary, Arab-looking palm-desolated malarial plain, and on the other side great salt lagoons, dead beyond the sandbar: these backed again by serried, clustered mountains, suddenly, while away beyond the plain, hills rise to sea again. Land and sea both seem to give out exhausted, at the bay head: the world's end. And into this world's end starts up Cagliari, and on either side, sudden, serpent-crest hills.

2. But it still reminds me of Malta: lost between Europe and Africa and belonging to nowhere. Belonging to nowhere, never having belonged to anywhere. To Spain and the Arabs and the Phoenicians most. But as if it had never really had a fate. No fate. Left outside of time and history. The spirit of the place is a strange thing. Our mechanical age tries to override it. But it does not succeed. In the end the strange, sinister spirit of the place, so diverse and adverse in differing places, will smash our mechanical oneness into smithereens, and all that we think the real thing will go off with a pop, and we shall be left staring.

3. On the great parapet above the Municipal Hall and above the corkscrew high-street a thick fringe of people is hanging, looking down. We go to look too: and behold, below there is the entrance to the ball. Yes, there is a china shepherdess in pale blue and powdered hair, crook, ribbons, Marie Antoinette satin daintiness and all, slowly and haughtily walking up the road, and gazing superbly round. She is not more than twelve years old, moreover. Two servants accompany her. She gazes supremely from right to left as she goes, mincingly, and I would give her the prize for haughtiness. The people watch in silence. There is no yelling and screaming and running. They watch in a suitable silence.

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[4] From *Sea and Sardinia*, by D. H. Lawrence. Copyright 1921 by Thomas Seltzer, Inc., 1949 by Frieda Lawrence. Reprinted by permission of The Viking Press, Inc.

Cagliari (kä′lyä rē̇): Capital of Sardinia.
Carabinieri (kä′rä bē̇ nyĕ′rē̇): Policemen in Italy.
fin-de-siècle (făn dē syâ kl′): The end of the nineteenth century.
serried (sĕr′ĭd): Crowded, compact.
tour-de-force (to͞or′dē fors′): Ingenious accomplishment.
vehicular (vē̇ hĭk′ŭ̇ lẽr): Pertaining to a vehicle.

4. Comes a carriage with two fat bay horses slithering, almost swimming up the corkscrew high-street. That in itself is a "tour-de-force": for Cagliari doesn't have carriages. Imagine a street like a corkscrew stair, paved with slippery stone. And imagine two bay horses *rowing* their way up it: they did not walk a single stride. But they arrived. And there fluttered out three strangely exquisite children, two frail, white satin Pierrots and a white satin Pierrette. They were like fragile winter butterflies with black spots. They had a curious, indefinable remote elegance, something conventional and "fin-de-siècle." But not our century. The wonderful artificial delicacy of the eighteenth. The boys had big, perfect ruffs round their necks: and behind were slung old, cream-colored Spanish shawls, for warmth. They were frail as tobacco flowers, and with remote, cold elegance they fluttered by the carriage, from which emerged a large black-satin Mamma. Fluttering their queer little butterfly feet on the pavement, hovering round the large Mamma like three frail-tissued ghosts, they found their way past the solid, seated Carabinieri into the hall.

5. The top of Cagliari is the fortress: the old gate, the old ramparts, of honey-combed, fine yellowish sandstone. Up in a great sweep goes the rampart wall, Spanish and splendid, dizzy. And the road creeping down again at the foot, down the back of the hill. There lies the country: that dead plain with its bunch of palms and a fainting sea, and inland again, hills. Cagliari must be on a single, loose, lost bluff of rock.

6. From the terrace just below the fortress, above the town, not behind it, we stand and look at the sunset. It is all terrible, taking place beyond the knotted, serpent-crested hills that lie, bluey and velvety, beyond the waste lagoons. Dark, sultry, heavy crimson the west is, hanging sinisterly, with those gloomy blue cloud-bars and cloud-banks drawn across. All behind the blue-gloomy peaks stretches the curtain of sinister, smouldering red, and away to the sea. Deep below lie the sea meres. They seem miles and miles, and utterly waste. But the sand-bar crosses like a bridge, and has a road. All the air is dark, a sombre bluish tone. The great west burns inwardly, sullenly, and gives no glow, yet a deep red. It is cold.

7. We go down the steep streets, smelly, dark, dank, and very cold. No wheeled vehicle can scramble up them, presumably. People live in one room. Men are combing their hair or fastening their collars in the doorways. Evening is here, and it is a feast day.

8. The big street by the sea is the Via Roma. It has cafés on one side and across the road the thick tufts of trees intervening between the sea and us. Among these thick tufts of sea-front trees the little steam tram, like a little train, bumps to rest, after having wound round the back of the town.

9. The Via Roma is all social Cagliari. Including the cafés with their outdoor tables on the one side of the road, and avenue strand on the other, it is very wide, and at evening it contains the whole town. Here, and here alone, carriages can spank along, very slowly, officers can ride, and the people can promenade "en masse."

10. We are amazed at the sudden crowd we found ourselves amongst—like a short, dense river of people streaming slowly in a mass. There is practically no vehicular traffic—only the steady dense streams of human beings of all sorts, all on a human footing. It must have been something like this in the streets of imperial Rome, where no chariots might drive and humanity was all on foot.

11. Little bunches of maskers, and single maskers danced and strutted along in the thick flow under the trees. If you are a mask you don't walk like a human being: you dance and prance along extraordinarily like the life-size marionettes, conducted by wires from above. That is how you go: with that odd jauntiness as if lifted and propelled by wires from the shoulders. In front of me went a charming coloured harlequin, all in diamond-shaped colours, and beautiful as a piece of china. He tripped with the light, fantastic trip, quite alone in the thick crowd, and quite blithe. Came two little children hand in hand in brilliant scarlet and white costumes sauntering calmly. They did not do the mask trip. After a while a sky-blue girl with a high hat and full skirts, very short, that went flip-flip-flip, as a ballet dancer's, whilst she strutted; after her a Spanish grandee capering like a monkey. They threaded among the slow stream of the crowd.

ACTIVITY 3

1. In his first paragraph, Lawrence includes details of description in the form of similes (a simile is a figure of speech which compares one thing directly with another, using the form "like"). Find how he describes the street and the town with similes, and complete the following:

(a) "The street like ______________________.

(b) ". . . this craggy-studded town, like __________

______________________________.

2. One thing that descriptive writers do to make a description more exact is to use several adjectives to describe one thing. Find in paragraph 1 and write:

(a) A phrase in which four adjectives are used to describe one thing: ______________________

______________________________.

(b) Two phrases in which two or more adjectives are used to describe one thing: __________

3. In paragraphs 3 and 4 the writer uses a good descriptive device: like a television camera he focuses on one incident, that of the children's ball. How does this increase your interest? __________

4. Note in these two paragraphs an outstanding descriptive device—the use of action verbs. Find and list five or more verbs that are used with originality and color: __________

5. Find three effective metaphors or similes used to describe the appearance of the children as they went to the ball: (a) __________

(b) __________

(c) __________

6. In paragraph 6 Lawrence brings together many color phrases for the description of the sunset. (a) Which one of the *five senses* is he emphasizing here? __________

(b) What is the mood he wishes to convey? __________

(c) Find six color words or phrases that help to create this mood: __________

7. Find and list two examples of effective similes in paragraphs 8–10: __________

8. Lawrence's habit of hyphenating words for greater exactness of description is seen in paragraph 1. List three or four examples of this technique: __________

9. Throughout the account, Lawrence inserts a thread, a theme which unifies all parts of his story. What is this one quality about Cagliari which to him seems to pervade every side of its life? __________

10. Often a good descriptive writer will coin his own words or expressions to describe what he wants us to see. Lawrence is especially good at this. Find at least five examples of new, original, or unusual descriptive words or phrases that you consider to be outstanding. __________

Understanding Significance in a Short Story

Many stories interpret life, modern problems faced by the characters, experiences which human beings have. In such stories, the author himself doesn't make the interpretations for you. He tells a story with an underlying significance, and he expects you to make the interpretation. Often these stories in themselves are very simple. Some people read them and miss the point entirely because they don't think beyond the simple plot to the truth or generalization about *life* which the writer intended to convey.

John Steinbeck is a popular American author who writes such stories. He writes stories and novels in a realistic manner, but he is interested in the deeper significance of modern problems faced by his characters. Among his many fine books, *The Grapes of Wrath* is considered outstanding. "The Turtle," an excerpt from this novel, may be termed a short story because it can stand alone as a single incident.

"The Turtle" has a very simple plot. Some people might read the story and think that perhaps it is just an animal story of the type written to entertain primary children. But John Steinbeck didn't write it for that purpose. He wanted to interpret the struggles of human beings.

In reading the story:

1. Compare the turtle's efforts and experiences with those of modern man. Think of the *significance* of things that the turtle does and of the things that happen to him as applied to the life of a struggling human being.

2. Time yourself in reading this simple story, but take time to *think* about its implications.

This is a story about a turtle and all of the hardships he experienced. It is a simple story, but a world of truth shines through it for a person who can read the significance *which lies behind the author's words.*

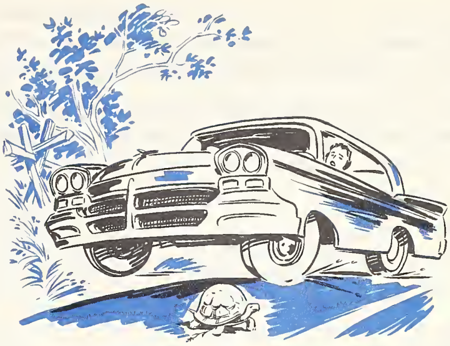
The Turtle [5]

Beginning time: Hr.______Min.______Sec.______

The concrete highway was edged with a mat of tangled, broken, dry grass, and the grass heads were heavy with oat beards to catch on a dog's coat, and foxtails to tangle in a horse's fetlocks, and clover burrs to fasten in sheep's wool. Sleeping life was waiting to be spread and dispersed, every seed armed with an appliance of dispersal, twisting darts and parachutes for the wind, little spears and balls of tiny thorns, and all waiting for animals and for the wind, for a man's trouser cuff or the hem of a woman's skirt, all passive but armed with appliances of activity, still, but each possessed of movement.

The sun lay on the grass and warmed it, and in the shade under the grass the insects moved, ants and ant lions to set traps for them, grasshoppers to jump into the air and flick their yellow wings for a second, sow bugs like little armadillos, plodding restlessly on many tender feet. And over the grass at the roadside a land turtle crawled, turning aside for nothing, dragging his high-domed shell over the grass. His hard legs and yellow-nailed feet threshed slowly through the grass, not really walking, but boosting and dragging his shell along. The barley beards slid off his shell and the clover burrs fell on him and rolled to the ground. His horny beak was partly open, and his fierce, humorous eyes, under brows like fingernails, stared straight ahead. He came over the grass leaving a beaten trail behind him, and the hill, which was the highway embankment, reared up ahead of him. For a moment he stopped, his head held high.

He blinked and looked up and down. At last he started to climb the embankment. Front clawed feet reached forward but did not touch. The hind feet kicked his shell along, and it scraped on the grass, and on the gravel. As the embankment grew steeper and steeper, the more frantic were the efforts of the land turtle. Pushing hind legs strained and slipped, boosting the shell along, and the horny head protruded as far as the neck could stretch. Little by little the shell slid up the embankment until at last a parapet cut straight across its line of march, the shoulder of the road, a concrete wall four inches high. As though they worked independently the hind legs pushed the shell against the wall. The head upraised and peered over the wall to the broad smooth plain of cement. Now the hands, braced on top of the wall, strained and lifted, and the shell came slowly up and rested its front end on the wall. For a moment the turtle rested. A red ant ran into the shell, into the soft skin inside the shell, and suddenly head and legs snapped in, and the armored tail clamped in sideways. The red ant was crushed between body and legs. And one head of wild oats was clamped into the shell by a front leg. For a long moment the turtle lay still, and then the neck crept out and the old humorous frowning eyes looked about and the legs and tail came out. The back legs went to work, straining like elephant legs, and the shell tipped to an angle so that the front legs could not reach the level cement plain. But higher and higher the hind legs boosted it, until at last the center of balance was reached, the front tipped down, the front legs scratched at the pavement, and it was up. But the head of wild oats was held by its stem around the front legs.



Now the going was easy, and all the legs worked, and the shell boosted along, waggling from side to side. A sedan driven by a forty-year-old woman approached. She saw the turtle and swung to the right, off the highway, the wheels screamed and a cloud of dust boiled up. Two wheels lifted for a moment and then settled. The car skidded back onto the road, and went on, but more slowly. The turtle had jerked into its shell, but now it hurried on, for the highway was burning hot.

And now a light truck approached, and as it came near, the driver saw the turtle and swerved to hit it. His front wheel struck the edge of the shell, flipped the turtle like a tiddly-wink, spun it like a coin, and rolled it off the highway. The truck went back to its course along the right side. Lying on its back, the turtle was tight in its shell for a long time. But at last its legs waved in the air, reaching for something to pull it over. Its front foot caught a piece of quartz and little by little the shell pulled over and flopped upright. The wild oat head fell out and three of the spearhead seeds stuck in the ground. And as the turtle crawled on down the embankment, its shell dragged dirt over the seeds. The turtle entered a dust road and jerked itself along, drawing a wavy shallow trench in the dust with its shell. The old humorous eyes looked ahead, and the horny beak opened a little. His yellow toe nails slipped a fraction in the dust.

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[5] From *The Grapes of Wrath,* by John Steinbeck. Copyright 1939 by John Steinbeck. Reprinted by permission of The Viking Press, Inc.

fetlock (fĕt′lŏk): Tuft of hair on a horse's leg above the hoof.
frantic (frăn′tĭk): Wild and excited.
parapet (păr′ȧ pĕt): A protecting wall.
passive (păs′ĭv): Inactive and patient.

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

No. words 910 × 60 = ____WPM
No. seconds

ACTIVITY 4

1. What is meant in the first paragraph, in which the author describes different types of seeds "waiting to be spread and dispersed . . . all passive but armed with appliances of activity?" ____________________

____

____

2. What is the significance of the two different types of drivers in the story? ____________________

____

____

3. What is the significance of mentioning that the seeds fell out of the turtle's shell and he dragged dirt over them?

____

____

4. What is the significance of repeating the phrases: "The old humorous eyes looked straight ahead," and, "The horny beak opened a little"? ____________________

____

5. What is the significance of the story as a whole? ____

____

____

____

Comprehension score: ____ WPM: ____

SELF-CHOICE ACTIVITIES

You may wish to carry out and discuss some of the suggestions below.

1. Choose verbs from the selection that present good descriptions for their action. Make a list of these verbs.
2. Suppose you could interview the turtle. What would you ask him? What would he tell you?
3. This story ends happily. Write another ending that might bring out some other special significance.
4. Suggest other titles for the story.

HOW TO READ NOVELS

There are many different kinds of novels, and you should read different kinds with different approaches and different skills.

The easiest novel to read is one in which a sequence of exciting incidents take place in rapid succession. In such a novel you read simply to follow the thread of the story as it unravels from one incident to another.

Quite different are the novels in which the author has for his purpose that of interpreting modern life and its problems. John Steinbeck and Sinclair Lewis write books of this type. In reading their books it would be superficial if all the reader did was to follow through the chain of incidents in the plot. He needs to take another step, arriving at deductions, generalizations, and applications which the author does not point out. In covering a novel of this type, use the same procedure in reading the entire book as you used in reading for significance in the story "The Turtle."

There are several other kinds of novels. Only one other type, however, will be discussed in this book. This other type is the one in which the author's purpose is to show changes in a hero or heroine's character as a result of events taking place over a period of time.

Such a book usually contains little or no conversation. The content consists largely of analysis, explanation, and description. The author uses analysis and explanation in telling what is going on in the minds of the characters. He uses these techniques in revealing to us how the characters reason and arrive at conclusions, which in turn lead to their actions and changes in character. Descriptive passages are often used to show us vividly how a character acts under certain conditions. The actions thus described reveal a great deal about the attitudes and emotions of a character, and these indicate changes taking place within the individual. In reading such novels, the reader should approach the story with the idea of reading more slowly and reflectively.

Silas Marner is an excellent example of the type of novel discussed above. This novel was written by Mary Ann Evans, whose pen name was George Eliot. She was a famous Englishwoman who lived during the 1800's. All of her books have interesting characters and plots and show a fine understanding of people.

One chapter from *Silas Marner* is presented here for you to read. Silas Marner was a miser who loved his gold better than anything else in the world. The chapter that you are about to read contains a crisis. It tells what happened when Silas discovered that his gold had been stolen.

In reading this chapter:

1. Identify the parts in which the author is making analyses or explanations of the thinking and actions of Silas Marner. Read these carefully in order that you may follow through the character's line of reasoning.
2. Identify the parts in which the author describes actions of the character. Try to visualize the character in a succession of mental pictures in which you really "see" him vividly, as his actions are described.
3. It isn't advisable to time yourself in reading a novel or a part of a novel of this type. You will get more out of the story and enjoy it more if you take time to appreciate the description and to reflect on the analyses and explanations of the author.

Chapter V: Silas Marner[6]

When Dunstan Cass turned his back on the cottage, Silas Marner was not more than a hundred yards away from it, plodding along from the village, with a sack thrown round his shoulders as an overcoat, and with a horn lantern in his hand. His legs were weary, but his mind was at ease, free from the presentiment of change. The sense of security more frequently springs from habit than from conviction, and for this reason it often subsists after such a change in the conditions as might have been expected to suggest alarm. The lapse of time during which a given event has not happened is, in this logic of habit, constantly alleged as a reason why the event should never happen, even when the lapse of time is precisely the added condition which makes the event imminent. A man will tell you that he has worked in a mine for forty years unhurt by an accident as a reason why he should apprehend no danger, though the roof is beginning to sink; and it is often observable that the older a man gets the more difficult it is to him to retain a believing conception of his own death. This influence of habit was necessarily strong in a man whose life was so monotonous as Marner's, who saw no new people and heard of no new events to keep alive in him the idea of the unexpected and the changeful; and it explains simply enough why his mind could be at ease, though he had left his house and his treasure more defenseless than usual. Silas was thinking with double complacency of his supper; first, because it would be hot and savory, and, secondly, because it would cost him nothing. For the little bit of pork was a present from that excellent housewife, Miss Priscilla Lammeter, to whom he had this day carried home a handsome piece of linen; and it was only on occasion of a present like this that Silas indulged himself with roast meat. Supper was his favorite meal, because it came at his time of revelry, when his heart warmed over his gold; whenever he had roast meat he always chose to have it for supper. But this evening he had no sooner ingeniously knotted his string fast round his bit of pork, twisted the string according to rule over his door key, passed it through the handle, and made it fast on the hanger than he remembered that a piece of very fine twine was indispensable to his "setting up" a new piece of work in his loom early in the morning. It had slipped his memory, because, in coming from Mr. Lammeter's he had not had to pass through the village; but to lose time by going on errands in the morning was out of the question. It was a nasty fog to turn out into, but there were things Silas loved better than his own comfort; so, drawing his pork to the extremity of the hanger and arming himself with his lantern and his old sack, he set out on what, in ordinary weather, would have been a twenty minutes' errand. He could not have locked his door without undoing his well-knotted string and retarding his supper; it was not worth while to make that sacrifice. What thief would find his way to the Stonepits on such a night as this? and why should he come on this particular night, when he had never come through all the fifteen years before? These questions were not distinctly present in Silas's mind; they merely serve to represent the vaguely felt foundation of his freedom from anxiety.

He reached his door in much satisfaction that his errand was done; he opened it, and to his short-sighted eyes everything remained as he had left it, except that the fire sent out a welcome increase of heat. He trod about the floor while putting by his lantern and throwing aside his hat and sack, so as to merge the marks of Dunstan's feet on the sand in the marks of his own nailed boots. Then he moved his pork nearer to the fire and sat down to the agreeable business of tending the meat and warming himself at the same time.

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[6] Eliot, George, *Silas Marner.*

contemptuous (kŏn tĕmp′tů ŭs): Scornful.
dissipated (dĭs′ĭ pāt′ĭd): Scattered.
guinea (gĭn′ĭ): Old English gold coin.
imminent (ĭm′ĭ nĕnt): About to happen.
poacher (pōch′ẽr): One who catches game illegally.
presentiment (prē zĕn′tĭ mĕnt): A forewarning.

Any one who had looked at him as the red light shone upon his pale face, strange, straining eyes, and meager form would perhaps have understood the mixture of contemptuous pity, dread, and suspicion with which he was regarded by his neighbors in Raveloe. Yet few men could be more harmless than poor Marner. In his truthful, simple soul not even the growing greed and worship of gold could beget any vice directly injurious to others. The light of his faith quite put out and his affections made desolate, he had clung with all the force of his nature to his work and his money; and, like all objects to which a man devotes himself, they had fashioned him into correspondence with themselves. His loom, as he wrought in it without ceasing, had in its turn wrought on him, and confirmed more and more the monotonous craving for its monotonous response. His gold, as he hung over it and saw it grow, gathered his power of loving together into a hard isolation like its own.

As soon as he was warm he began to think it would be a long while to wait till after supper before he drew out his guineas, and it would be pleasant to see them on the table before him as he ate his unwonted feast. For joy is the best of wine, and Silas's guineas were a golden wine of that sort.

He rose and placed his candle unsuspectingly on the floor near his loom, swept away the sand without noticing any change, and removed the bricks. The sight of the empty hole made his heart leap violently, but the belief that his gold was gone could not come at once—only terror, and the eager effort to put an end to the terror. He passed his trembling hand all about the hole, trying to think it possible that his eyes had deceived him; then he held the candle in the hole and examined it curiously, trembling more and more. At last he shook so violently that he let fall the candle, and lifted his hands to his head, trying to steady himself, that he might think. Had he put his gold somewhere else, by a sudden resolution last night, and then forgotten it? A man falling into dark waters seeks a momentary footing, even on sliding stones; and Silas, by acting as if he believed in false hopes, warded off the moment of despair. He searched in every corner; he turned his bed over and shook it and kneaded it; he looked in his brick oven where he laid his sticks. When there was no other place to be searched he kneeled down again and felt once more all round the hole. There was no untried refuge left for a moment's shelter from the terrible truth.

Yes, there was a sort of refuge which always comes with the prostration of thought under an overpowering passion: it was that expectation of impossibilities, that belief in contradictory images, which is still distinct from madness, because it is capable of being dissipated by the external fact. Silas got up from his knees, trembling, and looked round at the table; didn't the gold lie there, after all? The table was bare. Then he turned and looked behind him—looked all round his dwelling, seeming to strain his brown eyes after some possible appearance of the bags where he had already sought them in vain. He could see every object in his cottage—and his gold was not there.

Again he put his trembling hands to his head, and gave a wild, ringing scream, the cry of desolation. For a few moments after he stood motionless; but the cry had relieved him from the first maddening pressure of the truth. He turned and tottered towards his loom, and got into the seat where he worked, instinctively seeking this as the strongest assurance of reality.

And now that all the false hopes had vanished, and the first shock of certainty was past, the idea of a thief began to present itself, and he entertained it eagerly, because a thief might be caught and made to restore the gold. The thought brought some new strength with it, and he started from his doom to the door. As he opened it the rain beat in upon him, for it was falling more and more heavily. There were no footsteps to be tracked on such a night—footsteps? When had the thief come? During Silas's absence in the daytime the door had been locked, and there had been no marks of any inroad on his return by daylight. And in the evening, too, he said to himself, everything was the same as when he had left it. The sand and bricks looked as if they had not been moved. *Was* it a thief who had taken the bags? Or was it a cruel power that no hands could reach which had delighted in making him a second time desolate? He shrank from this vaguer dread, and fixed his mind with struggling effort on the robber with hands, who could be reached by hands. His thoughts glanced at all the neighbors who had made any remarks or asked any questions which he might now regard as a ground of suspicion. There was Jem Rodney, a known poacher, and otherwise disreputable; he had often met Marner in his journeys across the fields, and had said something jestingly about the weaver's money. Nay, he had once irritated Marner by lingering at the fire when he called to light his pipe, instead of going about his business. Jem Rodney was the man—there was ease in the thought. Jem could be found and made to restore the money. Marner did not want to punish him, but only to get back his gold which had gone from him and left his soul like a forlorn traveler on an unknown desert. The robber must be laid hold of. Marner's ideas of legal authority were confused, but he felt that he must go and proclaim his loss; and the great people in the village—the clergyman, the constable, and Squire Cass—would make Jem Rodney, or somebody else, deliver up the stolen money. He rushed out in the rain, under the stimulus of this hope, forgetting to cover his head, not caring to fasten his door; for he felt as if he had nothing left to lose. He ran swiftly, till want of breath compelled him to slacken his pace as he was entering the village at the turning close to the Rainbow. . . .

At the Rainbow, which was the inn in the village of Raveloe, Silas sought help. You will want to read the rest of this fine novel to find out what happens to poor Silas—how he sought his gold, what happened to Dunstan, the thief, and what additional events fate had in store for these characters. It is a novel you'll always remember.

ACTIVITY 1

Answer the questions below. Go back and read sections of the story if you need to in order to trace through a line of reasoning or to get more vivid pictures of description.

1. Underline two of the words below which best characterize the content of this incident from Silas Marner:
analytical conversational descriptive

2. What line of reasoning did the author follow in explaining why Silas' mind was at ease even though he had left his house unlocked? ______________________

3. What reasoning did the author have Silas do as a "vaguely felt foundation" for his freedom from anxiety about leaving his door unlocked? ______________________

4. Do you get a pleasant or unpleasant picture in the paragraph in which the author describes what happens after Silas enters his home upon return from his errand? ____________ If you were going to paint a picture based on this paragraph, what sentence would you choose to illustrate? ______________________

5. The author analyzed Silas' character in one paragraph and ended with two conclusions: one about the effect that Silas' loom had had on his character, and one concerning the effect of the gold on his character. What were these two conclusions:

(a) Effect of the loom: ______________________

(b) Effect of the gold: ______________________

6. In one paragraph the author describes the physical movements of Silas after he discovered the loss of his money. Can you picture him, as he passed from one stage of physical reaction to another, up to the point in which he lifts his hands to his head? What were these stages of physical reaction? ______________________

7. What reasoning did the author use in explaining why Silas went to his loom and worked after he had searched everywhere for his gold? ______

8. Follow the analysis that Silas made in arriving at the conclusion that Jem Rodney was the thief. Summarize that analysis. ______

9. Do you think any change in Silas' love for gold took place during this incident? ______ Why or why not? ______

10. Could anything that happened in this incident lead to any change in Silas' attitude toward his gold? ______ If so, what? ______

SELF-CHOICE ACTIVITIES

1. Write a character study of a miser based upon the suggestions given in this chapter. Mention his appearance, clothing, interests, and thoughts.
2. Explain how Silas used the door key to hang up the meat in the fireplace.
3. In George Eliot's book, the chapter you just read has no title; suggest a suitable one.
4. Discuss this question: "Are you sorry for Silas? Why or why not?"

HOW TO READ AN ESSAY

An essay is a form of literature in which an author discusses his own ideas and gives information he possesses. In an essay, therefore, the personality of the author is generally felt, and the style of writing is often personal. The author may be serious or humorous; he may write on any subject from pebbles to skyscrapers; he may be brief in style or rambling in thoughts—but at all times an essayist is giving you *his* thoughts in *his own individual* way.

As you read essays, therefore, you must try to understand the author's point of view and his purpose. Enjoy what he may talk about, but also notice how he says it and think how he is trying to express his thought.

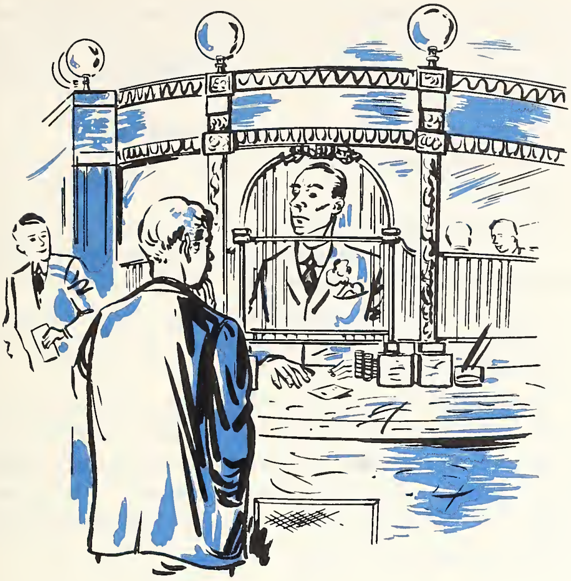
The essay which follows was written by Stephen Leacock, a Canadian writer and lecturer who had become known the world over for his humorous stories and essays. In his writings about ordinary people in everyday situations, he presents truly comic situations.

Leacock's essay entitled "My Financial Career" is perhaps his most famous humorous essay, and tells of an embarrassing experience. This type of essay often stimulates the reader to recall personal incidents that were embarrassing to him.

In reading this essay:

1. Start out with the idea you are going to enter fully into the essay along with the author. Try to get his start. Adjust to his way of thinking, and try to understand his viewpoint, his own personal way of looking at things. Notice the humorous and interesting way in which Leacock reaches the climax.

2. Time yourself in reading this essay. Its content is easy and interesting.



My Financial Career

Beginning time: Hr. ____Min.____Sec.____

When I go into a bank I get rattled. The clerks rattle me; the wickets rattle me; the sight of the money rattles me; everything rattles me. The moment I cross the threshold of a bank and attempt to transact business there, I become an irresponsible idiot.

I knew this beforehand, but my salary had been raised to fifty dollars a month and I felt that the bank was the only place for it.

So I shambled in and looked timidly round at the clerks. I had an idea that a person about to open an account must needs consult the manager.

I went up to a wicket marked "Accountant." The accountant was a tall, cool devil. The very sight of him rattled me. My voice was sepulchral.

"Can I see the manager?" I said, and added solemnly, "alone." I don't know why I said "alone."

"Certainly," said the accountant, and fetched him.

The manager was a grave, calm man. I held my fifty-six dollars clutched in a crumpled ball in my pocket.

"Are you the manager?" I said. God knows I didn't doubt it.

"Yes," he said.

"Can I see you," I asked, "alone?" I didn't want to say "alone" again, but without it the thing seemed self-evident.

The manager looked at me in some alarm. He felt that I had an awful secret to reveal.

"Come in here," he said and led the way to a private room. He turned the key in the lock.

"We are safe from interruption here," he said; "sit down."

We both sat down and looked at each other. I found no voice to speak.

"You are one of Pinkerton's men, I presume," he said.

He had gathered from my mysterious manner that I was a detective. I knew what he was thinking, and it made me worse.

"No, not from Pinkerton's," I said, seeming to imply that I came from a rival agency.

"To tell the truth," I went on, as if I had been prompted to lie about it, "I am not a detective at all. I have come to open an account. I intend to keep all my money in this bank."

The manager looked relieved but still serious; he concluded now that I was a son of Baron Rothschild or a young Gould.

"A large account, I suppose," he said.

"Fairly large," I whispered, "I propose to deposit fifty-six dollars now and fifty dollars a month regularly."

The manager got up and opened the door. He called to the accountant.

"Mr. Montgomery," he said unkindly loud, "this gentleman is opening an account, he will deposit fifty-six dollars. Good morning."

I rose.

A big iron door stood open at the side of the room.

"Good morning," I said, and stepped into the safe.

"Come out," said the manager coldly, and showed me the other way.

I went up to the accountant's wicket and poked the ball of money at him with a quick convulsive movement as if I were doing a conjuring trick.

My face was ghastly pale.

"Here," I said, "deposit it." The tone of the words seemed to mean, "Let us do this painful thing while the fit is on us."

He took the money and gave it to another clerk.

He made me write the sum on a slip and sign my name in a book. I no longer knew what I was doing. The bank swam before my eyes.

"Is it deposited?" I asked in a hollow, vibrating voice.

"It is," said the accountant.

"Then I want to draw a cheque."

My idea was to draw out six dollars of it for present

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[7] Leacock, Stephen, "My Financial Career," *Literary Lapses*, McClelland and Stewart Ltd. 1958

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convulsive (kən vul′siv): violently disturbing.
self-evident (self′ev′ədent): needing no proof, evident by itself.
sepulchral (sə pul′krəl): deep and gloomy, suggesting a tomb or sepulchre.

use. Someone gave me a cheque book through a wicket and someone else began telling me how to write it out. The people in the bank had the impression that I was an invalid millionaire. I wrote something on the cheque and thrust it in at the clerk. He looked at it.

"What! are you drawing it all out again?" he asked in surprise. Then I realized that I had written fifty-six instead of six. I was too far gone to reason now. I had a feeling that it was impossible to explain the thing. All the clerks had stopped writing to look at me.

Reckless with misery, I made a plunge.

"Yes, the whole thing."

"You withdraw your money from the bank?"

"Are you not going to deposit any more?" said the clerk, astonished.

"Never."

An idiot hope struck me that they might think something had insulted me while I was writing the cheque and that I had changed my mind. I made a wretched attempt to look like a man with a fearfully quick temper.

The clerk prepared to pay the money.

"How will you have it?" he said.

"What?"

"How will you have it?"

"Oh"—I caught his meaning and answered without even trying to think—"in fifties."

He gave me a fifty-dollar bill.

"And the six?" he asked dryly.

"In sixes," I said.

He gave it to me and I rushed out.

As the big door swung behind me I caught the echo of a roar of laughter that went up to the ceiling of the bank. Since then I bank no more. I keep my money in cash in my trousers pocket and my savings in silver dollars in a sock.

	Hr.	*Min.*	*Sec.*
Ending time:	____	____	____
Beginning time:	____	____	____
Total reading time:		____	____

$\frac{\text{No. words} \quad 895}{\text{No. seconds}} \times 60 =$ ____WPM

ACTIVITY 1

Write the answers to the following questions.

1. Do you think this is an account of a real incident? Give two reasons for your answer. ____________________

2. List five things that happened which increased the writer's embarrassment. After each indicate the reaction of the bank officials. ____________________

3. What is the effect of the use of the word "rattle" in the first paragraph? ______________________________

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4. Give three things you learn about the personality of the author from this essay. ______________________________

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5. It has been said that humour depends upon recognizing the incongruous, something which appears to be out of keeping. State three things which are incongruous in this essay. ______________________________

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SELF-CHOICE ACTIVITIES

1. Discuss why Leacock used dialogue to describe this interest.
2. What do you think was Leacock's philosophy of life?
3. Discuss Leacock's use of words in this essay.
4. Most essays are based upon a plan. Prepare an outline for this essay with headings and subdivisions.

HOW TO READ POETRY

Some people are very much interested in poetry and read it frequently. These people are not only interested in reading new poems as they are published, but they usually have favorite poems or favorite books of poems, to which they turn again and again for enjoyment and emotional satisfaction.

Unfortunately, however, many high school students of today say they don't like poetry. This means that they have never learned to enjoy and appreciate it. Such people are missing one of life's enrichments which otherwise might afford them much pleasure.

To enjoy poetry, you must read it differently than you read stories or essays. To get a better understanding of how to read and enjoy poetry, it is helpful to review briefly the way in which poetry first came into existence. Poetry is older than storytelling. It was first created by the chanting singer. If early man wanted to say something that would excite and stir his tribesmen, or if he had something to say that he wanted them to remember, he would chant and stamp and beat time as he made up the words of what he wished to tell. At points in which the words did not fit the rhythm of his beats, he would fill in with a cry or a shout. As time passed and man learned to write, some of these poems were recorded.

The urge to "sing" a message has endured through the ages. Great poets have written verse to tell stories, to share their feelings about common things, to ponder on the mysteries of life and the universe. Always have these verses been written in rhythmic, musical language and always have they been designed to stir your imagination and emotional responses.

It follows that if you are to enjoy reading poetry, you need to: (1) sense the poet's purpose in writing the poem and enter into his purpose with him, (2) free yourself to let your imagination soar, (3) prepare yourself to feel and hear and see things through the eyes of the poet, (4) listen to the rhythm of the poem and move along with it, (5) fill in the "gaps" with your own thinking.

The use of the procedures above will help you to enjoy the reading of poetry in general, but special adjustments need to be made in reading different kinds of poetry, as you will soon see.

Reading to Appreciate Music in a Poem

Many poems are closely related to music; they contain the words for songs or they have definite beats and rhythms in their lines.

Bliss Carman wrote poems of the rhythmical, rhyming type. You will enjoy reading his "Vagabond Song" which follows.

1. Read the entire poem through aloud or in whispered tones, and let it make its own first impression on you. Don't try to time yourself. Speed reading is not appropriate when one wants to enjoy poetry.
2. In this first reading, did you discover the mood of the poet? Was it admiration of a hero, expression of a personal philosophy, love of nature—or what?
3. Did you notice the rhyming words?
4. Did you feel the beat and rhythm that the poet used to express his mood?
5. Reread the poem orally, trying to enter more fully into the mood of the poet, and noting especially the rhythm and rhyme. Enjoy the rhyme. Try to respond to the rhythm as a dancer moves and sways in response to the rhythm in music.
6. Reread the poem several times if you wish, noting whether your enjoyment of the musical flow of the lines grows with your rereadings.

A Vagabond Song [8]

There is something in the autumn that is native to my blood—
Touch of manner, hint of mood;
And my heart is like a rhyme,
With the yellow and the purple and the crimson keeping time.

The scarlet of the maples can shake me like a cry
Of bugles going by.
And my lonely spirit thrills
To see the frosty asters like a smoke upon the hills.

There is something in October sets the gypsy blood astir;
We must rise and follow her,
When from every hill of flame
She calls and calls each vagabond by name.

---

[8] Reprinted by permission of Dodd, Mead & Company from *Bliss Carman's Poems.* Copyright 1929 by Bliss Carman.

ACTIVITY 1

Write your answers to these questions. Compare and discuss your answers with your teacher and classmates.

1. In what way does the title of this poem suggest its rhythm? ____________________

2. Do the lines of the poem have rhyme as well as rhythm? ______ Did the rhyme make the poem more pleasant to you? ______

3. Mention two pairs of rhyming words which appeal to the ear but whose rhyming parts are spelled differently.

______________ ______________

______________ ______________

4. Do the characteristics of autumn all have one distinctive rhythm? ______ Is there rhythm in: The swaying of trees in the autumn wind? ______ The patter of autumn raindrops? ______ The falling of autumn leaves? ______ Any others? ______ What? ______________

____

5. Which of the above rhythms is closest to the rhythm Mr. Carman used in his poem? ______________

6. Do you think this poem could be set to music? ______ Can you think of a ready-made tune to which the poem could be sung? ______ What is it? ______________

7. Why does the author repeat "calls" in the last line of the poem? ____________________

Reading a Poem for Its Story

Some poems are written by their authors for the purpose of telling a story. Often such poems are not outstanding for their rhythm, or musical language, or mood. They are enjoyable to us because of our interest in following the experiences of the characters, as we do in a short story. The short, novel way in which the story is told in poetry makes it especially entertaining. Sometimes these poems have deeper meanings behind them; these are left for the reader to supply.

A story poem is presented below. It was written by Edwin Arlington Robinson, whose compressed style often enabled him to present a whole life history in a few lines. His characters were often drawn in early New England settings.

In reading this poem:

1. Read it through aloud or in whispered tones for the purpose of following the story of Richard Cory.
2. When you have finished reading the poem, stop to think for a moment. Decide if the story has any deeper meaning.
3. Reread the poem to get deeper meaning from it in the light of the last line in the last stanza.

Richard Cory[9]

Whenever Richard Cory went down town,
We people on the pavement looked at him:
He was a gentleman from sole to crown,
Clean favored, and imperially slim.

And he was always quietly arrayed,
And he was always human when he talked;
But still he fluttered pulses when he said,
"Good morning," and he glittered when he walked.

And he was rich—yes, richer than a king—
And admirably schooled in every grace:
In fine, we thought that he was everything
To make us wish that we were in his place.

So on we worked, and waited for the light,
And went without the meat, and cursed the bread;
And Richard Cory, one calm summer night,
Went home and put a bullet through his head.

arrayed (ă rād′): Richly dressed.
imperially (ĭm pē̤r′ĭ ăl lĭ): Royally, like an emperor.

ACTIVITY 2

1. Do you think you enjoyed this story more as told in the poem than you would if it had been told as a narrative?

________ How can you account for this? ________

____

2. Tell the story in your own words in one short paragraph.

____

____

____

____

____

3. Compare your prose story with Robinson's poem in: terseness ________; vivid description ________; effect on someone who might read it ________.

4. Compare "Richard Cory" with "A Vagabond Song" in regard to rhythm and musical qualities. ________

____

____

5. Sum up the thought behind this story. ________

____

---

[9] Richard Cory: *From the Children of the Night,* 1897, by Edwin Arlington Robinson. Used by permission of Charles Scribner's Sons.

Reading to Appreciate Description in a Poem

One of the ways in which poets appeal to us is through the use of word pictures. They sometimes describe objects and scenes so vividly that the images of these things become alive in your mind. You *see* them mentally. This makes the poem real to you. You feel as if you were right in the setting of the poem, seeing the things described as the poet sees them. When you read a poem of this kind, give freedom to your mind's eye. Try to picture the things described, realistically.

"The Golden City of St. Mary" is a poem in which many word pictures are "painted." This poem was written by John Masefield, one of England's most famous sea poets. He writes beautiful poems about sailors and the sea, all filled with vivid description.

In reading the poem:

1. Read it all through orally just to let it make its own impression. Be sure to read the meanings of the words at the bottom of the page before you begin reading the poem.
2. Read it again; try to see very vividly the pictures which the poet describes.
3. If you enjoy these pictures, reread the poem as many times as you like.

The Golden City of St. Mary[10]

Out beyond the sunset, could I but find the way,
Is a sleepy blue laguna which widens to a bay,
And there's the Blessed City—so the sailors say—
  The Golden City of St. Mary.

It's built of fair marble—white—without a stain,
And in the cool twilight when the sea winds wane
The bells chime faintly, like a soft, warm rain,
  In the Golden City of St. Mary.

Among the green palm trees where the fireflies shine,
Are the white tavern tables where the gallants dine,
Singing slow Spanish songs like old mulled wine,
  In the Golden City of St. Mary.

Oh, I'll be shipping sunsetwards and westward-ho
Through the green toppling combers a-shattering into
    snow,
Till I come to quiet moorings and a watch below,
  In the Golden City of St. Mary.

---

[10] Masefield, John, "The Golden City of St. Mary," *Poems*, Macmillan Company, New York.

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combers (kōm′ẽrs): Ocean waves with high crests.
gallants (găl′ănts): Smartly dressed young men.
laguna (lä go͞o′nä): A shallow bay.
mull (mŭl): To heat and spice.

ACTIVITY 3

1. What picture do you see in the first two lines of the poem? ____________________

____

2. How do you picture the city itself? ____________________

____

____

3. What picture do you see in the third paragraph?

____

____

4. What picture do you see as the writer takes his trip to St. Mary's? ____________________

____

5. There is an auditory or "sound" picture in the poem that is as vivid as the visual pictures. You can almost hear it. What is this "sound" picture? ____________________

____

____

SELF-CHOICE ACTIVITIES

You may wish to write answers to these questions and discuss them with your teacher and classmates. Use a separate paper for your answers:

1. What are some color words mentioned in the poem?
2. Why is St. Mary's always mentioned as the "Golden City"?
3. What atmosphere does "quiet moorings" suggest?
4. What atmosphere does "singing slow Spanish songs" suggest?

Reading to Appreciate Humor in a Poem

Some poems are written just for the purpose of presenting a humorous situation for your reading entertainment. Such poems have no real substance. They provide only passing amusement and usually are not the kind that you wish to turn back to again and again.

Poetic form, however, seems to heighten the comic aspects of a situation. The cleverness with which the poet presents the situation in rhyme, rhythm, and poetic brevity causes the situation to seem much more humorous to us than it would if it were told as a narrative. Prepare to read a humorous poem with a sense of abandon and in a state of readiness to chuckle audibly or inaudibly.

This poem is written by William H. Drummond, a Canadian poet who wrote about the *habitants,* the French Canadian farmers. Drummond, though writing humorously, also revealed his sympathy for these people. Part of the humor comes from his use of dialect, which is composed of English words spoken with a French accent.

When reading "The Wreck of the Julie Plante":

1. Expect to read something funny.
2. Read the poem aloud, pronouncing the dialect as well as you can.

The Wreck of the "Julie Plante" [11]

On wan dark night on Lac St. Pierre,
De win' she blow, blow, blow,
An' de crew of de wood scow "Julie Plante"
Got scar't an' run below—
For de win' she blow lak hurricane,
Bimeby she blow some more
An' de scow bus' up on Lac St. Pierre
Wan arpent from de shore.

De captinne walk on de fronte deck,
An' walk de hin' deck too—
He call de crew from up de hole,
He call de cook also.
De cook she's name was Rosie,
She come from Montreal,
Was chambre maid on lumber barge,
On de Grande Lachine Canal.

De win' she blow from nor'-eas'-wes',—
De sout' win' she blow too,
W'en Rosie cry, "Mon cher captinne,
Mon cher, w'at I shall do?"
Den de captinne t'row de beeg ankerre,
But still de scow she dreef,
De crew he can't pass on de shore,
Becos' he los' hees skeef.

De night was dark lak wan black cat,
De wave run high an' fas',
W'en de captinne tak' de Rosie girl
An' tie her to de mas'.
Den he also tak' de life preserve,
An' jomp off on de lak',
An' say, "Good-bye, ma Rosie dear,
I go drown for your sak'."

Nex' morning very early
'Bout ha'f-pas' two-t'ree-four—
De captinne—scow—an' de poor Rosie
Was corpses on de shore,
For de win' she blow lak hurricane,
Bimeby she blow some more,
An' de scow bus' up on Lac St. Pierre,
Wan arpent from de shore.

Moral

Now all good wood scow sailor man
Tak' warning by dat storm
An' go an' marry some nice French girl
An' leev on wan beeg farm.
De win' can blow lak hurricane
An' s'pose she blow some more,
You can't get drown on Lac St. Pierre
So long you stay on shore.

ACTIVITY 4

1. Though this poem tells of a tragic happening, what makes this poem humorous? ______________________

____

____

2. What does the "moral" add to the poem? __________

____

____

3. Select ten words in dialect and translate them into English words. ______________________________

____

____

____

4. How does the poet emphasize the effect of the wind?

____

____

SELF-CHOICE ACTIVITIES

1. Discuss whether this poem would be humorous if it were not in dialect.
2. This poem is in ballad form. Compare the form used here with that used in any other ballads you have read.
3. Have you read other humorous poems? What were they? How do they compare with the one just read in their appeal to you as being funny?

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[11] Drummond, William H., "The Wreck of the 'Julie Plante'."

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arpent (är′p nt): an old French measure used in Quebec; equal almost to an acre, or when used of length, equal to about 63 yards.

Reading to Appreciate Emotion in a Poem

Many poems are deeply emotional. The poet feels something very strongly—love, hate, grief, regret, or death. He uses rhythm and sometimes rhyme with emotionally-charged words to portray his own feeling and to awaken the same feeling in the reader. When reading such poems you should be prepared to feel an emotion, to share with the poet the intense feeling which he was experiencing when he wrote the poem.

The poem that follows is one that is charged with deep emotion. It was written by John McCrae, who served as a Canadian soldier in the battles of World War I. This is his best-known poem.

The emotions felt by a soldier who dies for his country's sake are deep indeed. In this touching poem, the poet speaks out for the soldiers who died in World War I in the fields of Belgium. The poppy, which grows wild among the white crosses over their graves, has become today a special symbol of memory of our war dead.

In reading this poem:

1. Expect to have your emotions stirred deeply. Let yourself feel as the poet wants you to feel. You'll get more out of it if you can let yourself feel as deeply about the subject as the poet did when he wrote about it.

2. Read the poem aloud, but do not stop at the end of a line unless there is a mark of punctuation there.

In Flanders Fields[12]

In Flanders fields the poppies blow
Between the crosses, row on row,
That mark our place; and in the sky
The larks, still bravely singing, fly
Scarce heard amid the guns below.

We are the Dead. Short days ago
We lived, felt dawn, saw sunset glow,
Loved and were loved, and now we lie
In Flanders fields.

Take up our quarrel with the foe:
To you from failing hands we throw
The torch; be yours to hold it high!
If ye break faith with us who die
We shall not sleep, though poppies grow
In Flanders fields.

ACTIVITY 5

1. How did this poem make you feel? Excited? Happy? Angry? Or what? ____________________

2. Why is the subject, itself, a sad one? ____________________
____

3. What are some of the words and phrases that made you feel most sad? ____________________
____
____

4. What strong emotion had the soldiers shared "short days ago"? ____________________
____

5. Does the poem stir any emotion within you other than sadness? ________ If so, what emotion? ____________

SELF-CHOICE ACTIVITIES

You may wish to discuss these questions:

1. What sounds drown out the lark's singing? Why is that a sad thought?
2. Why did the soldiers say, "We shall not sleep"?
3. What might these soldiers say to us today if they could phrase a plea?
4. Can you think of any other poems that you have read which have aroused a feeling of sadness or other emotional responses in you? What are they?

Reading to Appreciate a Sonnet

The sonnet is a poem written according to specific rules. It was first developed in Italy and became popular in England during the time of Queen Elizabeth I. The sonnet always has exactly fourteen lines. It expresses one definite thought, and it has a regular pattern for its rhythm and for rhyming words at the ends of its lines. Sonnets carry many thoughts in their small allotment of space. In order to say a great deal in a small space, the writer of sonnets often uses the technique of inverted sentences. These make the sonnet somewhat more difficult to read.

Sonnets are read in the same way that other poems are read. However, since you may expect to find many closely packed ideas and some inverted sentences in a sonnet, you need to approach it with an attitude of doing rather slow, careful reading.

The sonnet that follows was written by William Wordsworth, who is one of the most famous writers of sonnets. This particular sonnet was written while Mr. Wordsworth was standing on a bridge over the famous river Thames, looking out at the city of London.

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[12] McCrae, John, "In Flanders Fields." © *Punch*, London.

In reading this sonnet:

1. Be ready to read a somewhat difficult short poem containing many ideas, and ideas that are rather important in nature.
2. Read this poem silently. Try to get each complete idea that the poet expresses.
3. Visualize the beautiful pictures in the poet's description as you read.

Composed Upon Westminster Bridge

Earth has not anything to show more fair.
Dull would he be of soul who could pass by
A sight so touching in its majesty.
This city now doth like a garment wear
The beauty of the morning; silent, bare,
Ships, towers, domes, theaters, and temples lie
Open unto the fields and to the sky,
All bright and glittering in the smokeless air.
Never did sun more beautifully steep
In his first splendor valley, rock, or hill;
Ne'er saw I, never felt, a calm so deep!
The river glideth at his own sweet will.
Dear God! the very houses seem asleep,
And all that mighty heart is lying still!

ACTIVITY 6

1. What is the main thought expressed in this poem?

____

2. Count the lines in this poem. How many are there?

______

3. See if you can discover the pattern of the rhyme words. Get a separate piece of paper. Write in a vertical column the end word in each line of the sonnet. Label the first rhyme sound "a," and mark "a" any other words which rhyme with it. Then label the next rhyme word "b," and so forth. Study the arrangement that results. This is the pattern Wordsworth used for his rhyme words.
4. Find two inverted sentences. Write the first three words of each of these sentences. (An inverted sentence is one in which the verb and adverb, if any, come before the noun.) (a) ______________________________

(b) ______________________________

FREE-CHOICE ACTIVITIES

1. A simile is a figure of speech which makes an effective description by using the words *like* or *as* to compare two things. Locate a simile in this poem. Explain why the poet used it.
2. Try writing a sonnet, yourself. Remember you must pack your thoughts into fourteen lines. After experimenting a little, work out the rhyme pattern that you are going to use in writing your sonnet.

HOW TO FIND INFORMATION ABOUT LITERATURE

Literature holds a world of pleasure for those who will take time to read. In order to have as much time as possible for the actual reading of literature it is helpful to be able to find whatever you want in this field quickly and easily. Toward this end the suggestions below are given.

Finding Books in the Library

Your school library and your public library, no doubt, have hundreds of books containing stories, poems, and essays. Like history and science, literature has a special series of numbers of its own in the Dewey Decimal System. According to the Dewey classification, literature (stories, poems, essays) is classified under the numbers 800–899. So you would find a book that you are looking for in literature under the 800 numbers. In most of the large libraries, however, books of fiction are arranged on the shelves alphabetically according to authors. Thus you would find *The Plains* by Joseph A. Altshuler near the beginning of the fiction shelves, because the author's name begins with *A*.

The card catalog is used in the same way in locating books in literature as in locating books in other fields.

Finding Information in Reference Materials

Maps and Atlases. It adds much to the vividness of a story if you locate on a map the places mentioned. In addition to the many ordinary maps and atlases, there are special atlases and maps of literature which you may enjoy, for example: *A Literary and Historical Atlas of America* and *A Literary and Historical Atlas of Europe*, both by I. G. Bartholomew (E. P. Dutton, publishers); *Book Lover's Map of America* and *Map of Great Adventures*, both by Paul M. Paine (R. R. Bowker, publisher); *A Historical Atlas of Canada,* by D. G. G. Kerr (Thomas Nelson and Sons, publisher).

Encyclopedias. All encyclopedias have a brief section devoted to an interesting and instructive general discussion of literature. If you wish to look up information about any one writer, however, it is advisable to use cross references. If you look up *Walt Whitman*, for example, in the *W* volume, you will find information about his life and writings. But if you follow through the cross references, you will find much worthwhile additional information about his life and work.

Biography. While you can find short accounts of an author's life in an encyclopedia, you can usually find much more complete accounts in special books that deal solely with his biography.

These general books of biography contain accounts of the lives of writers, *The Canadian Who's Who, Who's Who in Canada, The Macmillan Dictionary of Canadian Biography, Dictionary of American Biography, Who's Who, Who's Who in America, Current Biography, Twentieth Century Authors.*

Book Reviews. Some publications in which to look for reviews of current books are: *Saturday Night, Maclean's, The Saturday Review, The Hornbook, Time, Newsweek,* and the book page of most local newspapers.

Source books for current reviews are: *The Book List* (American Literary Association) and *The Book Review Digest* (H. W. Wilson & Company).

Locating Information in Periodicals

The Canadian Periodical Index and the *Reader's Guide to Periodical Literature* are the best references for you to use in locating stories, poems and essays that appear in current magazines.

ACTIVITY 1

Write your answers on a separate piece of paper.

1. Name the Dewey Decimal numbers for literature.
2. If you were looking on the open shelves of a library for a book written by Clara Zyve, where would you find it?
3. If you were looking for a book by Joseph Conrad, and didn't know the title, how could you locate this title?
4. What is the name of a special map that would be helpful in reading literature?
5. What is it desirable to do in using an encyclopedia besides locating the main topic?
6. Give the title of a reference book that devotes itself entirely to biography of authors.
7. Name a general reference book in which you might find information about the lives of authors.
8. Give the name of a newspaper or magazine in which you might find reviews of recent books.
9. Name a source book in which to find book reviews.
10. Where would you look to locate a recent magazine story?

INCREASING YOUR VOCABULARY IN LITERATURE

The words below are among those which appear often in literature books at your level. You will meet them frequently in your reading both in and out of school.

Probably you know the pronunciation and meaning of many of these words already. But study each one anyhow just to make sure.

Say each word to yourself distinctly. Then read the meaning of the word and think about it as it is used in *literature.*

act ăkt	One of the principal divisions of a play or dramatic work.
ambiguous ăm bĭg′u̇ *ŭ*s	Capable of being understood in two or more senses.
anecdote ăn′ĕk dōt	A brief narrative of an interesting incident, often about a notable person.
anonymous *ȧ* nŏn′*ĭ* m*ŭ*s	Bearing no name, of unknown authorship.
anthology ăn thŏl′ȯ jĭ	A collection of literary selections.
anticlimax ăn′tĭ klī′măks	A less elevated and sometimes ridiculous conclusion as found in fiction or speech.
authentic ô thĕn′tĭk	Based on fact, credible, true.
author ô′thẽr	One who composes or writes a book, article, story, or document.

Choose one of the words in the column at the left to complete the meaning of each of the sentences below. Write the word in the blank space where it belongs. Add s to make it plural if necessary.

1. Many ____________ have been told about Van Horne, the general manager and engineer of the Canadian Pacific Railway.
2. Some of our most beautiful poems bear no author's name. They are ____________.
3. Stephen Leacock is perhaps the most internationally famous Canadian ____________.
4. Your textbook in literature containing literary writings is an ____________.
5. Sometimes a historical novel is based upon real facts and is quite ____________.
6. The play had three main divisions. The last ____________ was longer than the other two.
7. The best part of the story was at the beginning. It ended in an ____________.
8. A person might interpret the sentence in two or three different ways. It was ____________.

autobiography ô′tō bī ŏg′rȧ fĭ	Memoirs of one's life written by oneself.
ballad băl′ăd	A poem that tells a story, often capable of being set to music.
biography bī ŏg′rȧ fĭ	The history of a person's life, written by another person.
brevity brĕv′ĭ tĭ	Expression in few words, terseness.
climax klī′măks	The highest point; culmination of a series of ideas or events.
collaborator kŏ lăb′ȯ rā′tẽr	One who labors with another in writing a literary work.
comedy kŏm′ĕ dĭ	A light drama, typically having a happy ending.
debate dė bāt′	Strife in argument, controversial discussion.
dialect dī ȧ lĕkt	A local or provincial form of a language.
dialogue dī′ȧ lŏ̊g	The conversation in literary or dramatic writing.
diary dī′ȧ rĭ	A book for recording personal experiences or observations of the writer.
editorial ĕd′ĭ tō′rĭ ăl	Prose written by an editor, usually expressing his opinion on some topic of current interest.
eloquent ĕl′ȯ kwĕnt	Forceful and fluent, as in speech or writing.
essay ĕs′ā	A prose composition dealing with a subject from a more or less personal standpoint, usually interpretative or analytical.
exposition ĕks′pȯ zĭsh′ŭn	A presentation of subject matter in detail, explaining, setting forth, expounding.
fantastic făn tăs′tĭk	Odd, eccentric, conceived in unrestrained imagination; as of a story or poem.
fiction fĭk′shŭn	Literature (usually prose) which is invented by means of the imagination.
fluent flo͞o′ĕnt	Ready in the use of words; speaking with ease and freedom.

9. If you wanted to buy a book which had been written on the life of John A. Macdonald, you would ask for a ____________ of Macdonald.

10. Winston Churchill wrote an account of his own life. This is an ____________.

11. The story held one's interest all the way through as it worked up to a strong ____________.

12. Martha Raye usually appears in light comic plays. She prefers to act in ____________.

13. It took two people to write one of the popular new plays. Each person was a ____________.

14. Lincoln's short Gettysburg Address is an excellent example of ____________.

15. Of all of the singing story poems, perhaps the ____________ of Robin Hood is the best known.

16. Every night before Marie went to bed she wrote of her day's experience in her ____________.

17. *Alice in Wonderland* is not based on fact. It is entirely ____________.

18. The poet was very ____________ in his praise of his lady-love.

19. There was much arguing in the Senate over the bill to raise taxes. Stenographers recorded every word of the ____________.

20. Bacon wrote a series of learned compositions expressing his opinions on the advancement of learning. This kind of composition is known as an ____________.

21. The conversation in the Uncle Remus stories is written in the ____________ of the early southern Negroes.

22. Most newspapers of large cities contain a daily ____________ written by an editor who discusses a current event.

23. Jules Verne's story *From the Earth to the Moon* seemed ____________ when it was published in 1865.

24. A scientist usually attempts to write a scholarly ____________ in which he presents detailed facts free from personal opinion.

25. Tom enjoyed the conversation in a story he was reading. He said, "I like the ____________."

26. The parliamentary candidate never paused for lack of words. He was a ____________ speaker.

folklore fōk′lōr′	Tales or sayings of a legendary nature that have been preserved by a people.
journalist jûr′năl ĭst	One whose business it is to write for a public newspaper or magazine.
manuscript măn′ů skrĭpt	An author's copy of his work, hand- or typewritten, from which the printed copies are made.
masterpiece mȧs′tẽr pēs′	A piece of literature that has been done with extraordinary skill.
melodious mė lō′dĭ ŭs	Agreeable to the ear, with a sweet succession of sounds.
monotonous mȯ nŏt′ȯ nŭs	Without change or variety; wearisomely uniform.
morbid môr′bĭd	Characterized by emotional impressions of a gloomy or unwholesome nature.
motive mō′tĭv	The guiding or controlling idea shown in a work or in a part of one.
myth mĭth	A story invented by early people, usually to explain something universal.
novel nŏv′ĕl	A fictitious prose tale of considerable length.
oration ȯ rā′shŭn	A speech delivered publicly that treats an important subject in a formal manner.
pamphlet păm′flĕt	A book of a few sheets of printed matter, usually having a paper cover.
pathos pā′thŏs	That which awakens pity, sympathy, and tender sorrow.
periodical pē̦r′ĭ ŏd′ĭ kăl	A magazine or other publication that appears at stated or regular intervals.
playwright plā′rīt′	A maker or writer of plays.
plot plŏt	The plan or main action of a literary composition.
prologue prō′lȯg	The preface or introduction to a play, story, or poem.

27. Mr. Summers was a famous ______________ who devoted all of his time to writing for periodicals.

28. Would you have liked to see the material in this book when the author handed it to the publisher? It was in ______________ form then.

29. The Grimm brothers collected and published tales based on ______________ of the old countries of Europe.

30. Longfellow's "Hiawatha" is beautifully written. It is a ______________.

31. In a recent play the author's ______________ was to show life in political society in Washington.

32. A famous statesman delivered an ______________ at the funeral of the former Lieutenant Governor.

33. The conversation ran along in a wearisome way. It was ______________.

34. Ernest Hemingway's long prose tale, *A Farewell to Arms*, is one of his best ______________.

35. An actor came out on the stage just before the play began and gave a ______________.

36. Frank Dempster Sherman's "Daisies" is filled with pleasant-sounding words. It can be described as a ______________ poem.

37. Jack bought a twenty-page ______________ on the subject of butterflies.

38. The story was so filled with ______________ that Jane wept as she read it.

39. The Greeks' stories of the gods on Mount Olympus tried to explain rain, sun, the growth of crops, and so on. These stories are ______________.

40. A condensed story often gives you little more than the main plan or ______________.

41. *Maclean's* is published biweekly. It is a well known Canadian ______________.

42. Some of Poe's stories are so gloomy that they might be called ______________.

43. The ______________ wrote ten plays before he had one accepted.

prose prōz	The ordinary language of man in writing, as opposed to poetical measure or rhythm.
proverb prŏv′ûrb	A brief popular saying that couches a truth in an epigrammatic way.
résumé rā′zu̇ mā′	A summing up; a condensed statement.
review rė̄ vū′	An explanatory and critical account of a publication or dramatic performance, usually in a periodical.
scene sēn	A division of an act, in which there is a change in place or lapse in continuity of time.
slang slăng	Widely current terms having a forced, fantastic, or grotesque meaning.
suspense *sŭs* pĕns′	Mental uncertainty as to an outcome.
synopsis sĭ nŏp′sĭs	An outlined plan or a condensed statement of a story or play.
talent tăl′*ĕ*nt	Special aptitude or ability in doing a specific thing, such as writing stories.
theme thēm	The subject or topic on which a person writes or speaks.
tragedy trăg′*ĕ* dĭ	A serious dramatic work in which the leading character meets with a catastrophe.
translation trăns lā′sh*ŭ*n	The result of turning spoken or written words into one's own or another language.
trite trīt	Being so commonly used as to have lost its novelty and interest.
versatile vûr′s*ȧ* tĭl	Turning with ease from one thing to another; having facility in various subjects.
villain vĭl′*ĭ*n	A character in novels or plays drawn to represent a scoundrel, rascal, or criminal.
volume vŏl′y*ŭ*m	A collection of written or printed sheets, bound together; a book.
voluminous vȯ lū′mĭ n*ŭ*s	Consisting of several volumes; in writing, something of great length.

44. The old saying "He who laughs last laughs best" is a ________________.

45. Nathaniel Hawthorne wrote in common language. His writings are all ________________, not poetry.

46. The phrase "rosy dawn" has been used so much it has become ________________.

47. Continued stories in periodicals usually carry a ________________ of what has happened in preceding installments.

48. The ________________ in the play was justly punished in the last act.

49. You can get a critic's idea of a new novel or play by reading his ________________ in a newspaper or magazine.

50. On Armistice day many speeches are made. The ________________ is peace.

51. *Hans Brinker* was published in English in 1865. Soon after, a ________________ was made into Dutch.

52. The second ________________ of the act showed the family in the kitchen of their home instead of the living room.

53. Wordsworth had a special ________________ for writing poetry.

54. At the end of the play the leading character was killed by his wife. It was a ________________.

55. The expression "He's a square" is an example of modern ________________.

56. There are 20 ________________ in one set of encyclopedias.

57. One magazine published a summary of a popular novel. It was a 300-word ________________.

58. *Webster's New International Dictionary* is a ________________ book.

59. Sir Winston Churchill was successful as a statesman, soldier, author and painter. He was a very ________________ person.

60. In a good mystery story you are uncertain all the way through as to how it will end. The author keeps you in ________________.

CHAPTER 13

HOW TO READ MATHEMATICS

With the strong emphasis upon mathematics in high school at the present time, all students should be concerned with acquiring the special skills needed in reading in this field. Some students complain that they have trouble studying arithmetic, algebra, and geometry and that they find these subjects to be difficult. In most cases, such students would feel very differently about mathematics if they knew how to *read* in this field. Special reading skills are needed in mathematics, and even excellent students profit by improving their special reading skills in mathematics.

What is there about mathematics that demands special reading skills? For one thing the content of a problem consists of two kinds of symbols—word symbols and mathematical symbols. You really have to read two languages in the one short paragraph of a problem. And the word symbols do not represent words that you have become familiar with in other fields. *Parallelogram, equi-angular, equation,* and the like are specialized words met only in mathematics. Then, too, many of the words that you already know have a different meaning when used in mathematics; for example, *operation, inverse, converse, constant, positive,* and so on. So you really need to master a new vocabulary in mathematics in order to read problems with competence.

Furthermore, you need to learn to read the special symbols of mathematics. These include not only the numbers and operational symbols that you mastered several years ago in the elementary grades, but also many new symbols: signs of various sorts, formulas, equations, geometrical figures, and so on. Learning to recognize these symbols and their meanings is like learning to *read* from the first, as you did in the primary grades; only this time you are working with different kinds of symbols.

Another reason why the reading of mathematics calls for special skills is because problems are *closely packed* with meanings. They are concentrated. Every word and every symbol is important. Skipping an unfamiliar word and filling in a meaning from context has no place in reading mathematics. You need not only to read the problem as a whole for a general overview, but you must examine every word and every mathematical symbol within the problem for its special meaning. Even the shortest formula is packed with meanings and has a direct bearing on the solution of the problem in which it is found.

Another reason why the reading of mathematics is different from other kinds of reading is that you need to do something with the meanings that you get from the symbols after you have read them. This requires deep interpretation and careful reasoning. All of the details in the problem have to be interpreted, organized, whipped into shape, in order to make a plan for solution. Thus the very nature of reading and interpreting problems calls for skills that are quite different from those used in other subject fields.

When you reach the point of tackling a problem for solution, first read the problem through as a whole to get its general import. Then work out your plan for solution before you do any computing at all.

DEVELOPING A PATTERN FOR USE IN READING PROBLEMS

Most problems are stated in a similar pattern. At the beginning the situation is given, or the condition under which the problem took place is stated; then follows a series of numbers or other mathematical values; and finally we are asked or told what to find.

Since problems themselves assume similar patterns, it is often helpful to develop a pattern of work to use in reading problems. One pattern that often proves helpful is the following:

1. Read carefully the problem as a whole. If there are any words in it that you don't understand, look them up.
2. Concentrate upon the direction or question that asks you or tells you what to find, and be sure that you understand this sentence perfectly.
3. Plan the steps that you will take in arriving at the solution asked for.
4. Write the numbers, formula, or other symbols that you will need in working out each step.
5. Compute the problem.

Try this plan in solving the problems that follow. Be sure to read each problem as a whole first of all. Then reread as much as is necessary in order to find information to complete the phrases under each problem. Compute your problems on a separate sheet of paper.

Problems of Owning an Automobile[1]

1. Mr. Miller is thinking about getting a second car for his wife and youngsters to use. He is interested in one whose price is $599 cash or $100 down and $32 a month for 18 months. How many dollars would he save by paying cash?

To find: ______________________

Steps in solution: | *Numbers needed in each step:*

(a) ______________ ______________

(b) ______________ ______________

(c) ______________ ______________

Answer: ______________

2. Mack's car averages 14 miles to the gallon of gasoline and gasoline costs him 41.9 cents a gallon. In April he drove it 763.3 miles. How much did gasoline cost Mack in April?

To find: ______________________

Steps in solution: | *Numbers needed in each step:*

(a) ______________ ______________

(b) ______________ ______________

Answer: ______________

3. Alvin bought the following accessories for his car: turn signals, $7.79; a 6-volt spotlight, $14.50; new rear view mirror, $5.49; and an auto compass, $1.98. He lived in a community in which there is a 2% sales tax. What was his total bill on all purchases?

To find: ______________________

Steps in solution: | *Numbers needed in each step:*

(a) ______________ ______________

(b) ______________ ______________

(c) ______________ ______________

Answer: ______________

4. To get a general idea of the price of a certain make and model automobile, Tom searched the classified ads of his daily newspaper. He found the following "asking prices" for the type of automobile he was interested in: $429, $399, $548, $225, $459, $499, $325. Find the average of these prices.

BIG SA
SALE
BIG
SAL
SALE
REAL BARGAINS IN FINE USED CARS
$599

To find: ______________________

Steps in solution: | *Numbers needed in each step:*

(a) ______________ ______________

(b) ______________ ______________

Answer: ______________

5. In one province the minimum automobile liability insurance policy costs $68.00 per year if the driver is 25 years of age or over, or $212.84 if the driver is male and under 25. What per cent increase in the rates for a male driver under 25 does this represent?

To find: ______________________

Steps in solution: | *Numbers needed in each step:*

(a) ______________ ______________

(b) ______________ ______________

Answer: ______________

6. Depreciation on a car is the difference between what you pay for a car and what you sell (or trade) it for. If Mr. Owings paid $2650 for his car and put 52,873 miles on it before selling it four years later for $1125, what was his (a) average annual depreciation

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[1] These problems were prepared for this book by Francis J. Mueller.

to the nearest dollar, (b) average depreciation per mile to the nearest cent?

To find: ________________

Steps in solution: *Numbers needed in each step:*

(a) ________ ________

(b) ________ ________

(c) ________ ________

Answer (a): ______ *Answer* (b): ______

7. Under ideal conditions, the approximate distance (D) needed to stop an automobile traveling at a certain speed (s) is given by the formula: $D = .06s^2 + s$. For stopping on wet pavement, the right side of the equation should be multiplied by a factor of 1.5.

What distance will be necessary to stop a car traveling at 25 miles per hour in dry weather?

To find: ________________

Steps in solution: *Formula needed:*

(a) ________ ________

(b) ________

Answer: ________

8. Driving at the limit on a rainy day in a 30-mile per hour speed zone, you decide to keep your car a distance equal to your stopping distance from the car in front. How many feet should this be?

To find: ________________

Steps in solution: *Formula needed:*

(a) ________ ________

(b) ________

(c) ________

Answer: ________

READING TO UNDERSTAND AND APPLY ALGEBRAIC CONCEPTS

On these pages you will find some of the basic ideas in algebra explained. Then you will have an opportunity to show whether or not you understand the explanation by applying it to examples or problems.

In working with these pages:

1. Read each explanation *very carefully*. If you don't understand it, reread it.
2. Several algebraic symbols are discussed. Make sure that you understand what each symbol stands for.
3. Do the examples or problems to check your understanding of the algebraic meanings discussed, just as you check yourself in getting the thought in reading other types of material by answering a series of questions based on word symbols, only.

Reading Equations [2]

1. Laws that apply to arithmetic computation are the same as those which apply to algebraic computations. However, answers frequently include letters instead of numbers.

(a) Find the value of $\frac{2}{5} + \frac{2}{3}$. ________

(b) What is the value of $\frac{n}{5} + \frac{n}{3}$? ________

(c) Check your result in (b) by substituting 2 for n in your answer. ________

2. An equation is a statement that two quantities are equal. Which of the following are equations? Check the ones that are equations.

(a) $11 - 2 = 7 + 2$

(b) $4 \times 5 = 40 \div 2$

(c) $2 \div \frac{1}{2} = 1$

(d) $\frac{1}{4} \div \frac{1}{2} = \frac{1}{4} + \frac{1}{4}$

(e) $5 \times 4.2 = 60 \div 3$

(f) $12 - 6\frac{1}{2} = 3.5 + 2$

3. An algebraic expression which represents the cost of 5 pears at n cents each is $5n$ cents. If there are n pears at 7 cents each, the cost is $7n$ cents. Write an algebraic expression for the cost of each of the following:

(a) 3 candy bars at n cents each. ________

(b) x pencils at 5 cents each. ________

(c) 2 tickets to a movie at x cents each. ________

(d) y hamburgers at 30 cents each. ________

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[2] This material was prepared for this book by Margaret Joseph.

4. As in arithmetic, only *like* algebraic terms may be added. For example, $4x$ and $3x$ are like terms, while $5x$ and $3y$ are unlike terms. If we have $1x$, the 1 is not used, so we know that y means $1y$. Add the following:

(a) $7x + y$; $2x + 4y$; and $3x + 2y$ __________

(b) $7x + 3y$; $2x + z$; and $y + 3z$ __________

(c) Subtract $5x + 3y$ from the sum of $12x + 6y$ and $2x + y$ __________

(d) From the sum of $3x + 2y$ and $x + 4y$, subtract $2x + 2y$. __________

5. x^2 means that x is multiplied by x, or that x is used twice as a factor.

(a) What does x^3 mean? __________ (b) What is the value of x^3 when $x = 3$? __________

(c) Does $3x$ have the same meaning as x^3? __________ Substitute 2 for x to prove your answer. __________

6. Find the numerical value of each of the following when $x = 1$, $y = 2$, and $z = 3$.

(a) $\dfrac{x^2yz}{x+y}$ __________ (b) $\dfrac{x^2+z^2}{y+z}$ __________ (c) $\dfrac{z^2-2x^2}{2\ y^2}$ __________ (d) $\dfrac{5y-x^3}{\frac{1}{2}xyz}$ __________

7. Algebraic equations are often referred to as a form of shorthand to express an arithmetic problem.

Arithmetic form	*Algebraic form*
Five more than some number is eight.	$n + 5 = 8$
One less than some number is eleven.	$n - 1 = 11$
Three times some number is forty-five.	$3n = 45$
One-half of some number is twelve.	$\frac{1}{2}x = 12$

On the *first* lines, write each of the following statements in algebraic form.

(a) Eight times a certain number is ninety-six. __________ __________ __________

(b) Four less than a number is thirteen. __________ __________ __________

(c) A third of a number is ten. __________ __________ __________

(d) A number divided by seven is six. __________ __________ __________

(e) Six more than a certain number is thirty. __________ __________ __________

Reading Inverse Operations

8. In solving algebraic equations, the inverse operation is applied. Addition and subtraction are inverse operations. Multiplication and division are also inverse operations. If we wish to solve the equation $x - 5 = 7$, we note that subtraction was used to form the equation and so the inverse or addition is used to solve the problem:

$x - 5 = 7$
$x = 12$ (adding 5 to both members of the equation)

Solve each of the illustrative exercises given in problem 7 and state the inverse operation used in each. Extra spaces are allowed for your answers after each of the equations you wrote for that problem.

9. More than one inverse operation may be needed to solve an algebraic equation. Suppose you want to solve the equation $2x + 4 = 16$. Since 4 was added to $2x$ to form the equation, we must first subtract 4 from both sides of the equation. This leaves $2x = 12$. Multiplication was used to form this part of the equation, so division must be used to solve it. Hence, $x = 6$. The form preferred is:

$2x + 4 = 16$
$2x = 12$ (subtracting 4)
$x = 6$ (dividing by 2)

Use the form suggested above and solve each of the following exercises.

(a) $4x + 7 = 39$ (b) $3x - 5 = 10$ (c) $\frac{1}{2}x + 2 = 6$

__________ __________ __________

__________ __________ __________

10. The formula for the area of a square is $A = s^2$ where s is the length of one side.

(a) What is the area of a square 5 inches on each side? ________

(b) Find the area of a square 10 inches on a side. ________

(c) If a square piece of material 5 inches on a side is worth 15 cents, what is the value of a square piece of the same material 10 inches on a side? ________

(d) From the solutions to the above exercises, try to discover a method of finding the cost of a square piece of material 15 inches on a side instead of 10 inches. Write a plan for your computation similar to the one you used in working with the problems on pages 155–156.

Reading Plus and Minus Values

11. You no doubt have played a game where points may be lost as well as gained. If you made 6 points in one game, you can think of $+6$ as your score, while a loss of 8 points may be represented as -8. If these scores represent the points made or lost on two successive games, the final score of $+6$ and -8 is -2. Some people may write a 2 with a circle around it to represent a score called "2 in the hole." Represent each of the following as $+$ or $-$ values.

(a) A gain of 5 yards in football. ________

(b) A penalty of 10 yards. ________

(c) A gift of $5.00. ________

(d) A drop in temperature of 7°. ________

(e) 12 pounds overweight. ________

(f) A debt of $3.00. ________

12. In each of the following, write the result and express it as a $+$ or $-$ number.

(a) A gain of 5 yards on the first play and a gain of 15 yards on the second play. ________

(b) A gain of 15 yards on the first play and a loss of 10 yards on the second. ________

(c) A gain of 3 pounds in weight one month and a loss of 5 pounds the next. ________

(d) A grade of 85 on one test and a grade of 97 on the next test. ________

Reading Variables and Constants

13. Formulas are made up of variables and constants. A number that does not change in value in a given problem is called a *constant,* while those numbers that may take different values are called *variables.* Algebraic expressions may also consist of constants and variables. If $10n$ cents is the cost of n oranges at 10 cents each, the 10 is a constant because it remains the same while the letter n is a variable for it may represent any number. Name the constants in each of the following.

(a) $A = \pi r^2$ ________

(b) $A = \frac{1}{2} bh$ ________

(c) $S = 16 t^2$ ________

(d) $F = \frac{9}{5} C + 32$ ________

(e) $V = \frac{1}{3} Bh$ ________

(f) $5x = 10y$ ________

14. When one variable is related to another in such a way that as one increases the other increases proportionally, the second is said to *vary directly as the first.* The larger the diameter of a circle, the larger the circumference. Hence the diameter is directly proportional to the circumference.

If one variable is related to another so that as one increases the other decreases proportionally, the second is said to *vary inversely as the first.* If you have $3.00 to spend for refreshments for a club party and you want to know what you can purchase, you must know how many items to buy and the cost of each. The more expensive each item is, the fewer you can buy. This is an illustration of inverse variation.

Tell whether each of the following is an illustration of direct or inverse variation.

(a) If you buy 10 gallons of gasoline, the cost varies ____________ as the cost per gallon.

(b) The length of time that it takes to do a given piece of work varies ____________ as the number of men hired to do the work.

READING ALGEBRAIC FORMULAS AS PARTS OF SPEECH [3]

Letters and Operation Symbols

An algebraic formula is a sentence written in shorthand form, since the letters, numbers, and symbols represent words. Every complete sentence has a subject and a predicate, and so a formula, being a sentence, has the same characteristics. When the letters and numbers used in a formula represent quantities, objects, or ideas, they may be called *nouns*. We know that the distance traveled equals the rate of speed multiplied by the time spent in travel. This is expressed by the formula $D=rt$. D stands for *distance*, r for *rate*, and t for *time*. D, r, and t, then, are the nouns.

There must be action to hold the words of a sentence together; so a formula must show action. Every predicate has a verb. The operation symbols +, –, =, ( ), and the line to show division ($\frac{1}{2}$ means "1 divided by 2") may be considered the *verbs* of a formula because they stand for processes. In the formula $D=rt$, you will notice that a multiplication sign, which is used in arithmetic, is not given. This symbol is not used in algebra because it would be confused with x, which may represent an unknown quantity in an equation or expression. The omission of an operation symbol between two or more letters signifies that the multiplication process is to be used. The omitted symbol is also a verb.

Exponents and Subscripts

If any number, such as x, is multiplied by itself, we may think of it as $(x)(x)$. In algebra, we express this as x^2. A number written to the right and above a number is called an *exponent*. An exponent tells how many times the number is used as a factor. The expression a^4 means $(a)(a)(a)(a)$, and 7^3 means $(7)(7)(7)$. Since the exponent stands for a process of multiplication, we may call it a *verb*.

Everyone has at some time enjoyed a seesaw. For a seesaw to function properly, the heavier of two children must sit closer to the fulcrum or balance point than the lighter child. This is an application of a law of levers that states that when objects balance, the weight of one object times its distance from the fulcrum equals the weight of the other object times that object's distance from the fulcrum. In a formula this relationship is expressed as $w_1l_1=w_2l_2$; w_1 and w_2 represent two different weights and l_1 and l_2 represent two different lengths. Small letters or numbers to the right and below any numbers or letters are called *subscripts* and are used to show a distinction between two like letters that represent unequal values. Since subscripts show this distinction, we may call them the *adjectives* of a formula.

In the formula $D = rt$, there are two verbs. One is very obvious, the = sign, but the multiplication must not be ignored.

1. Since the letters are abbreviated nouns, what parts of the formula $D=rt$ may be classified as nouns? ________
2. What are the verbs in the formula for the area of a triangle, $A=\frac{1}{2}bh$? ________
3. What are the nouns in the formula in Example 2? ________ What words do they represent? ________ ________
4. In the simple interest formula, $i=prt$, there are (one, two, three) verbs. (Underscore the correct words.)
5. In the formula to change Fahrenheit to Centigrade temperature, $C=\frac{5}{9}(F-32)$, how many verbs are there? ________. Name them. ________
6. What are the nouns in Example 5? ________
7. In the formula for the volume of a frustum of a circular cone, $V=\frac{1}{3}\pi h(r^2+r_1^2+rr_1)$, r and r_1 represent the radii of the upper and lower bases. What are the nouns of this formula? ________ The verbs? ________
8. In the formula in Example 7, what are the adjectives? ________
9. The formula that compares the volume of a gas with its pressure is $P_1V_1=P_2V_2$. What are the nouns? ________ The verbs? ________ The adjectives? ________
10. In the formula given in Example 9, are there any exponents? ________ Explain. ________ ________
11. What is the value of $5x^2$ when $x=3$? ________

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[3] This material was prepared for this book by Margaret Joseph.

In geometry, as in other branches of mathematics, the ability to *read* its special kind of text contributes greatly to your success in working with this subject. In order to get the most out of your reading in geometry, you need to do slow, careful reading, and to observe these techniques.

1. Make sure that you understand the special terms. Look up and study any of which you do not know the meaning.
2. Read the explanations very carefully. Then try to give these explanations to yourself in your own words. If you cannot formulate the explanation clearly, reread the discussion in the book and clear up the points that you did not understand.
3. Try to fix new terms and formulas in your mind so that you can recall them. In doing this, always think of the *meaning* of the term or formula, not just the term or formula in itself.
4. Visualize the forms of geometric figures. When new forms are introduced, they are usually accompanied by a picture. Examine this picture carefully. Close your eyes and try to *see* the form as you associate it with its name.
5. Many examples and problems are accompanied by diagrams. In such cases read the explanation of the diagram with the greatest care, referring back and forth to the diagram itself, noting the lines indicated by numbers or letters as they are mentioned in the explanation. Finally, study the diagram without the explanation and see if you understand it. If not, reread the explanation, again referring back and forth to the diagram and text until you do understand it.
6. If you have trouble in solving a problem, you will find it helpful to analyze it and to write the various items in a pattern as you did in the pattern suggested for working with the problems on pages 155-156.
7. In proving theorems it is helpful to organize your analysis and plan according to some such pattern as this:

Given: ____________

To Prove: ____________

Plan: ____________

In writing out your proof it is advisable to write your statements in a list and opposite each statement write your reason in this format:

Statements	*Reasons*
1. ____________	1. ____________
2. ____________	2. ____________
3. ____________	3. ____________
4. ____________	4. ____________

You will have an opportunity to practice using some of these suggestions in reading the geometry text that follows.

Reading to Understand Some General Terms and Concepts in Geometry [4]

Geometry deals with properties and relationships of figures. Plane geometry is limited to the study of figures with two dimensions, such as the triangle, square, rectangle, and circle.

Before any geometric proof can be made, it is necessary to have a thorough understanding of certain terms upon which proofs are based. In a game of bridge, or in any athletic game, the players must have a basic understanding of the rules which govern the game to enjoy participating in it. Similarly, in the study of geometry success is not possible unless the basic definitions and assumptions are clearly understood.

Terms needed to understand this lesson are listed below. Study them carefully so that you may apply them in the exercises that are given.

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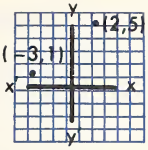
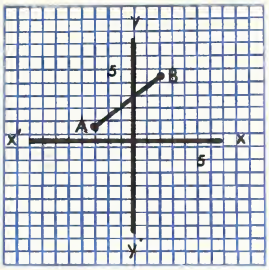
[4] This material was prepared for this book by Margaret Joseph.



A point has no dimensions. It represents position only. A point on a graph is determined by plotting an ordered pair of numbers. Each ordered pair, (2,5) and (−3,1), illustrates a point as shown.



A line has neither thickness nor width but only infinite length. A line may be thought of as the infinite path of an ordered pair of numbers, or as a point moving infinitely without change in direction. When two ordered pairs of numbers are connected, they determine a line which has two definite end points and so is called a *segment*. A line segment is a definite part of a line. The illustration shows segment *AB* formed by joining (2,5) and (−3,1).

An *axiom* is a general statement that is accepted without proof; "The whole is equal to the sum of its parts" is an axiom.

A *postulate* is a *geometric* statement accepted without proof; "Only one straight line can be drawn between any two points" is a postulate.

A *theorem* is a statement that can be proved with axioms, postulates, and previously proved theorems.

A geometric *construction* is a problem whose solution requires the use of straightedge and compass.

A *corollary* is a statement easily derived from a preceding *theorem.*

Equal figures have the same area.
Similar figures have the same shape.
Congruent figures are both similar and equal.

Write word-answers to the following exercises.

1. Plane geometry deals with the study of figures which have __________ dimensions.
2. A __________ has no dimensions.
3. A line with definite ends is called a __________________.
4. A __________ has only the dimension of length.
5. If a square and a parallelogram each has an area of 100 square inches, they are said to be __________.
6. A general statement accepted without proof is called an __________________.
7. Triangles ABC and DEF are said to be __________ because they both have an area of 65 square feet and they have the same shape.
8. A statement easily derived from a preceding theorem is called a ______________________________.
9. (4,−7) is called an ____________________ of numbers.
10. When (4,−7) is plotted on a graph chart it represents a __________.
11. Five theorems are listed below and are lettered (a), (b), (c), (d), and (e). Following them there are twelve statements, some of which are corollaries of the five theorems. A theorem may have more than one corollary. Read each theorem carefully. Then read the last twelve statements to find one or more that may easily be proved true because you know the theorem is true. It may help to read over the summaries on p. 160. List by letter the corollary or corollaries for each theorem.

(a) If two triangles are mutually equiangular, they are similar.
(b) The opposite sides of a parallelogram are equal.
(c) If two angles of a triangle are equal, the sides opposite are equal.
(d) If two sides and the included angle of one triangle are equal respectively to two sides and the included angle of the other, the triangles are congruent.
(e) The sum of the interior angles of a triangle is 180°.
(f) The opposite angles of a parallelogram are equal.
(g) Segments of parallels included between parallels are equal.
(h) The sum of the acute angles of a right triangle is 90°.
(i) Two triangles are similar if their corresponding sides are proportional.
(j) If two sides of a triangle are equal, the angles opposite are equal.
(k) If the legs (sides adjacent to the right angle) of one right triangle are equal to the legs of another, the triangles are congruent.
(l) All sides of an equiangular triangle are equal.
(m) All sides of a square are equal.
(n) Two right triangles are similar if an acute angle of one is equal to an acute angle of the other.
(o) If the hypotenuse (the side opposite the right angle) and a leg of one right triangle are equal to the hypotenuse and leg of another, the triangles are congruent.
(p) Two triangules are similar if two angles of one are equal respectively to two angles of the other.
(q) The sum of the exterior angles of any polygon is 360°.

Theorem	*Corollary*
(a)	__________
(b)	__________
(c)	__________
(d)	__________
(e)	__________

12. Select theorem (b) and tell why the statements chosen are corollaries. ______

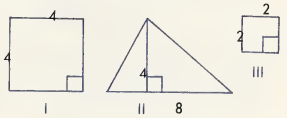
______

______

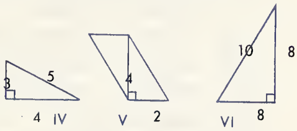
13. List by letter the statements that were not corollaries of any theorem given. ______

14. Figures I and III (below right) are squares, Figure V is a parallelogram, right angles are marked with small squares, lines perpendicular to bases are heights, area of a square or a parallelogram equals base times height ($A=bh$), area of a triangle equals one-half base times height ($A=\frac{1}{2}bh$). Which figures are similar? ______

15. Are any of the figures equal? ______ If so, which? ______



16. Are any of the figures congruent? ______ If so, which? ______

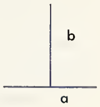


17. Which of the statements lettered (a), (b), (c), and (d) are theorems? ______

(a) Any point in the bisector of an angle is equidistant from the sides of the angle.
(b) Any given angle may be bisected.
(c) A tangent to a circle may be constructed at a given point on the circle.
(d) Two tangents to a circle from an outside point are equal.

18. Which statements in Exercise 17 are constructions? ______

19. Without measuring, how do you think segments a and b compare? Is a less than, equal to, or greater than segment b? ______ Now measure a and b to see if your decision was correct. ______



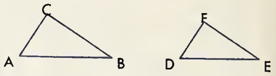
Reading to Understand Theorems[5]

1. In geometry, we call a statement requiring proof a *theorem*. The *hypothesis* of a theorem contains the facts that are given or assumed to be true. The *conclusion* of a theorem is the part to be proved. An if-clause is always a hypothesis. In a theorem without an if-clause, the complete subject is the hypothesis. The conclusion is either the clause following an if-clause or the complete predicate. Underline the conclusions in (a)–(d).

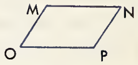
(a) If two angles of one triangle are equal respectively to two angles of another triangle, then the third angles are equal.
(b) If a line is perpendicular to a radius at the point of contact (the point at which the radius intercepts the cricle), it is tangent to the circle.
(c) The diagonals of a rectangle are equal.
(d) Opposite angles of a parallelogram are equal.

2. (a) State the hypothesis and the conclusion of Example 1(a) in terms of the letters of the angles at the right. ______

______



(b) State the hypothesis and the conclusion for example 1 (d) in terms of the drawing at right. ______



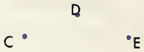
______

3. We know that one straight line may be drawn through two points. AB is the line that connects points A and B.

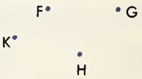
(a) How many straight lines can be drawn between points C, D, and E?

______

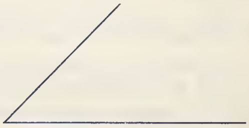
(b) How many curved lines do you think can be drawn between points A and B? ______



(c) How many straight lines can be drawn between points F, G, H, and K? ______ Make sure that you have drawn all lines possible before stating your answer.



4. An angle ($\angle$) is formed when two lines are drawn from the same point, which is called the *vertex*. Lines AB and BC are drawn from the same point B and form $\angle ABC$. This angle may also be read $\angle CBA$ or $\angle B$. When more than one angle has the same vertex, three letters are needed to read the angle. The vertex letter must always be used for the middle letter.



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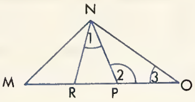
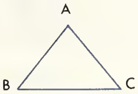
[5] This material was prepared for this book by Margaret Joseph.

Check the correct answer to each question.



(a) Which of the angles listed refers to $\angle 1$?
$\angle NRP$ $\angle PNR$ $\angle N$ $\angle MNO$
(b) Which of the angles refer to $\angle 2$?
$\angle OPN$ $\angle OPR$ $\angle NPO$ $\angle P$
(c) Which of the following refer to $\angle 3$?
$\angle NOP$ $\angle NOM$ $\angle O$ $\angle RON$

5. In $\triangle ABC$, we say that AB and AC form or include $\angle A$. $\angle B$ and $\angle C$ have a common side BC. We say that $\angle B$ and $\angle C$ include side BC.



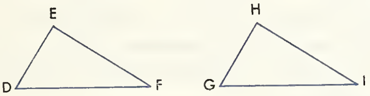
(a) Which sides include $\angle C$? ______

$\angle B$? ______
(b) Which side is included by

$\angle A$ and $\angle C$? ______

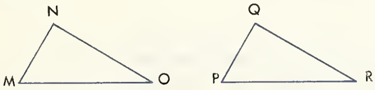
By $\angle A$ and $\angle B$? ______

6. Two triangles are congruent if two sides and the included angle of one are equal respectively to two sides and the included angle of the other. (Triangles are congruent if they have the same size and shape.)



(a) If $\angle D = \angle G = 48°$, $\angle F = \angle I = 37°$, and $DE = GH = 20''$, what one additional statement of equality is needed to prove triangles DEF and

GHI congruent? ______



(b) If $MN = PQ = 17''$, $\angle M = \angle P = 56°$, and $NO = QR = 24''$, what one additional statement of equality is needed to prove triangle MNO con-

gruent to triangle PQR? ______

7. For every direct statement, there is a negative statement called an *inverse*.

Direct Statement	*Inverse Statement*
If a quadrilateral is a square, its diagonals are equal.	If a quadrilateral is not a square, its diagonals are not equal.

State the inverse of each of the following statements.
(a) If a quadrilateral is a rhombus, its diagonals

are perpendicular. ______

______

(b) If two triangles are congruent, their corre-

sponding angles are equal. ______

______

(c) If the sun shines tomorrow, my airplane will

depart on schedule. ______

______

(d) Do you thing the inverse of every statement

is true? ______ Use the inverse of (c) to ex-

plain your answer. ______

______

8. If all or any part of the hypothesis of a theorem is interchanged with all or any part of the conclusion, the resulting statement is called a converse of the first.

Statement	*Converse*
In the same or in equal circles, equal chords have equal arcs.	In the same or in equal circles, equal arcs have equal chords.

Below are three statements numbered (1), (2), and (3). These statements are followed by 6 statements lettered (a) through (f). After each numbered statement, give the letter of its converse.

(1) An equilateral triangle is also equiangular.

______

(2) The bisector of the vertex angle of an isosce-

les triangle is perpendicular to the base. ______
(3) If two parallel lines are cut by a transversal (third line), the alternate interior angles

are equal. ______
(a) If a line bisects the vertex angle of an isosceles triangle, it is perpendicular to the base.
(b) If the bisector of the vertex angle of a triangle is perpendicular to the base, the triangle is isosceles.
(c) If two lines are cut by a transversal so that a pair of alternate interior angles are equal, the lines are parallel.

(d) The alternate interior angles are equal when two parallel lines are cut by a transversal.

(e) An equiangular triangle is also equilateral.

(f) If a triangle is equilateral, it is also equiangular.

9. Ability to draw conclusions plays an important part in the study of geometry. In each of the following, tell whether the deduction or conclusion is true or false.

(a) High School *A* has 30 boys out for football while High School *B* has 20 boys out for football. Therefore, High School *A* has a larger enrollment than High School *B*. ________

(b) At High School *C* 16% of the pupils are enrolled in some musical organization. In High School *D* 5% of the pupils are enrolled in some musical organization. Therefore, the pupils at High School *C* are more interested in music than pupils at High School *D*.

____

(c) Mary's father graduated from Yale University two years before Dick's father. Therefore, Mary's father is older than Dick's father.

____

10. In each of the geometric reasoning exercises that follow, the first two statements are true. Tell whether or not the third statement is a logical conclusion based on the first two. Write *yes* for each logical statement, *no* for the others.

(a) An isosceles triangle has two equal sides.
$\triangle ABC$ has two equal sides.
Therefore, $\triangle ABC$ is an isosceles triangle.

____

(b) All right angles are equal.
$\angle A = \angle B$
Therefore, $\angle A$ and $\angle B$ are right angles.

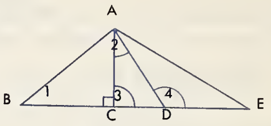
____

(c) The opposite sides of a rectangle are parallel.
The opposite sites of this figure are parallel.
Therefore, this figure is a rectangle.

____

(d) The sum of the angles of any triangle is 180°.
Two of the angles of this triangle are 41° and 58°.
Therefore, the third angle of this triangle is 81°. ________

11. An angle that is greater than a right angle is called an *obtuse angle,* while an *acute angle* is less than a right angle. An angle of 180° is called a *straight angle.* A straight angle is read with three letters the same as any other angle.



(a) What kind of angle is each of the following?

$\angle 1$ ____ $\angle 2$ ____ $\angle 3$ ____ $\angle 4$ ____

(b) Read the straight angle with its vertex at point *D*. ________________

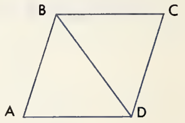
(c) How many triangles have $\angle 1$ for one of their angles? ________ Name the triangles.

____

12. Two angles may be proved equal if they are:
1. Halves of equal angles.
2. Parts of a bisected angle.
3. Right angles.
4. Opposite to equal sides in a triangle.
5. Angles formed by perpendicular lines.

Study the facts given in the three exercises below and then tell which of the reasons given above will prove the angles equal. More information is given in each problem than is needed to answer the question.

(a) *BD* is a diagonal of parallelogram *ABCD*. $AB = BC = CD = AD$. Why does $\angle ABD = \angle ADB$?

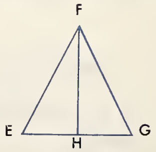


____

(b) In parallelogram *ABCD*, $AB = BC = CD = AD$. Diagonal BD bisects $\angle ABC$. *BD* is three units long. Why does $\angle ABD = \angle CBD$? [Use the same drawing as for part (a).]

____

(c) In triangle *EFG*, *FH* is perpendicular to *EG*. $\angle EFH = \angle GFH$ and $\angle E$ is acute. Why does $\angle EHF = \angle GHF$? ________



HOW TO READ GRAPHS

A graph is really a picture. It vividly shows relationships among various items and enables us to grasp these relationships at a glance. You probably find graphs in your history texts more often than in any of your other textbooks. Graphs, however, do appear often in science and mathematics books.

If you develop your skill in reading graphs to a high degree, you will find this skill to be very useful to you in your school work and in life outside of school now and later. In newspapers and magazines you will find graphs on prices, products, weather reports, sports, stocks, and so on. In professional and trade journals, graphs are used widely to convey numerical facts. A world of information can be gathered from these graphs in a very short space of time if one knows how to get the most out of them through effective reading techniques such as you are about to use.

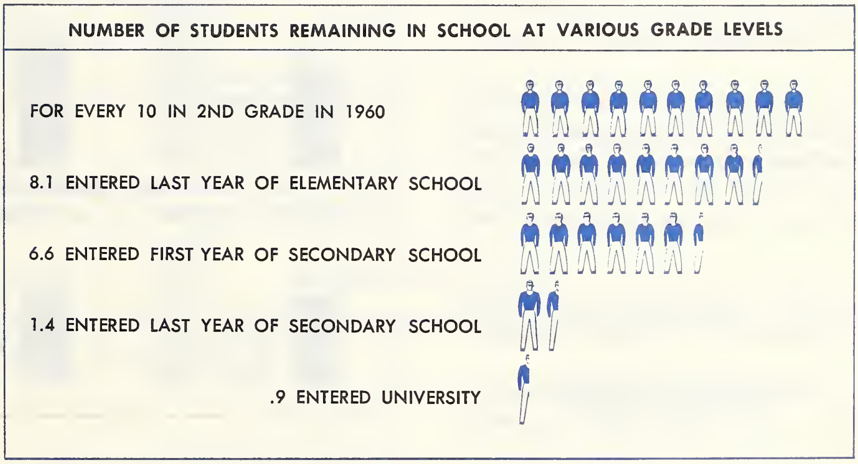
In general this procedure is effective in reading graphs:

1. Read the title to find out exactly what is being compared.
2. Read the figures and labels on the graph and make sure that you grasp what it is that they stand for.
3. Study the graph to make comparisons in regard to the different items illustrated.
4. Finally interpret the significance of the graph as a whole. What is the important conclusion to be gleaned from the entire graphic picture, and how can you account for it?

You will have an opportunity to apply these procedures in reading four different kinds of graphs that follow.

Reading a Pictograph

A *pictograph* uses figures or pictures to make the facts more interesting and simple for the reader. In 1961, the Dominion Bureau of Statistics published these figures to show the number of students remaining in school at various grades.



1. What is being compared in this graph? ____________

____

2. What do the numbers on the left side of the chart represent? ____________________

3. What do the figures represent? ____________

4. Out of 10 children entering 2nd grade, how many would finish sixth grade? ________ How many would enter secondary school? ________ How many would enter last year of secondary school? ________ How many would enter university? ________

5. Between which two successive levels does the greatest number drop out? ____________________

____

6. For every 10 pupils entering second grade, how many drop out before entering last year of secondary school? ________

7. What is the significance of this graph as a whole? ____________________

____

What does it mean in terms of school and university attendance for the entire country? ____________________

____

How can you account for your conclusion? ____________________

____

8. Make a pictograph using facts about points made by three different boys during a recent football season: Ray Johnson, 42 points; Chip Stevens, 33 points; and Joe Carrol, 19 points. Use a drawing of a football to represent each 6 points. Do your work on a separate piece of paper.

Reading a Bar Graph

The following bar graphs were prepared from figures (estimates) released by the Dominion Bureau of Statistics.

1. What is the subject of the graph? ____________________

____

2. What two classes of provinces are compared?

____

3. What two groups are compared under these two general headings? ____________________

____

4. What do the numbers above the bars stand for?

____

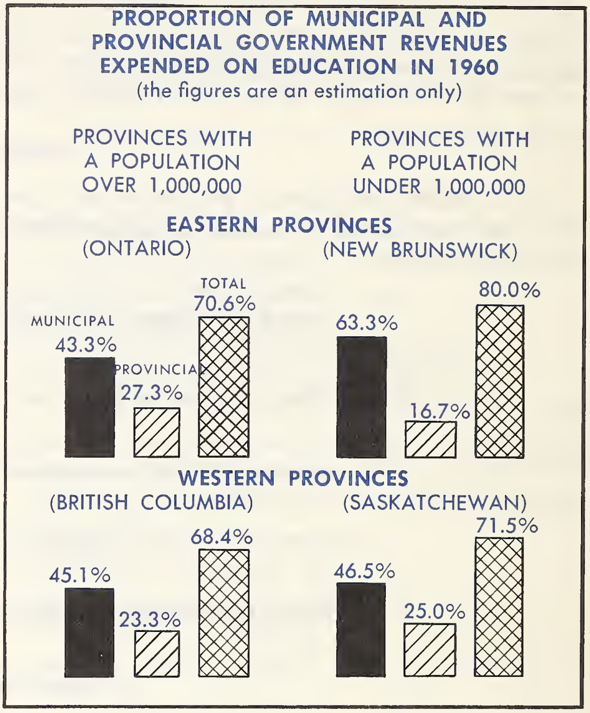
5. Which group draws the greatest total per cent of revenues for education from municipal and provincial funds? ____________________ Which has the smallest total? ____________________

6. In provinces with a population over 1 million what per cent is contributed by an eastern province? ____________________ With municipal revenues amounting to $198,000,000 in 1958 what would the total revenue in dollars amount to? ____________________

7. In eastern provinces with a population under 1,000,000 and a provincial grant of $43,000,000 to education what would the total revenue in dollars amount to? ____________________

8. In a western province with a population under 1,000,000 and a provincial revenue of $20,000,000, how much money will come in in total revenues? ____________________ How much will be received in municipal revenues? ____________________

9. In a western province with a population over 1,000,000 and a municipal revenue of $45,000,000, how much more revenue will be received from provincial sources than municipal sources? ____________________



10. What do these graphs mean as a whole? ____________________

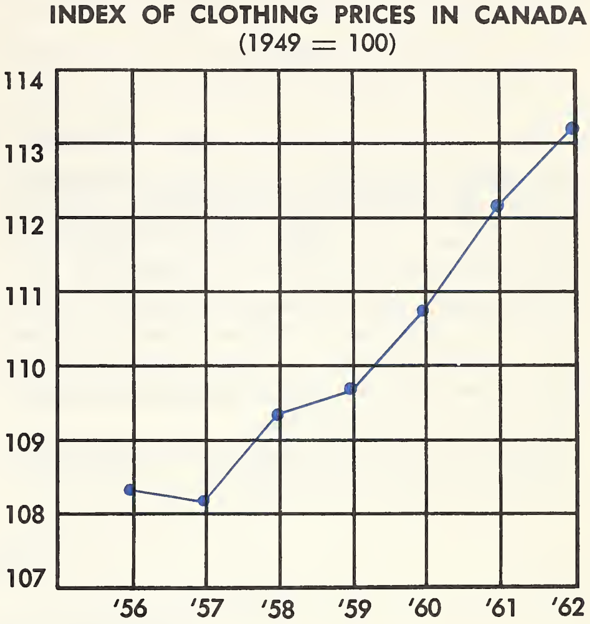
____

____

11. Get information about dropouts in the tenth, eleventh, and twelfth grades in your school during the past year. Prepare a bar graph to use in making comparisons. Have three bars for each grade allowing one bar to represent the number of involuntary dropouts, one bar to represent the number of voluntary dropouts and the third bar to represent the total dropouts. Allow a half inch for each 10 students if the largest number is 120 or less. Use a fourth inch if the largest number is greater than 120.

Reading a Line Graph

This line graph shows the *change* in clothing prices over a period of time, as reported by the Dominion Bureau of Statistics in 1963. The price in 1949 is used as the basis for the graph and is represented by 100.



1. What is the title of the graph? ________

____

For what period of years does the graph show the changes? ________

____

2. During which year was the highest point reached? ________ What was the price index at that time? ________ When was the lowest point reached? ________ What was the index for that year? ________

3. A suit costing $100 in 1949 would cost $108.50 when the index was 108.5. Approximately how much would a suit cost in 1961 if it sold for $100 in 1949?

____

4. During which period did the index decrease? ________ During which one-year period did the index increase the most? ________

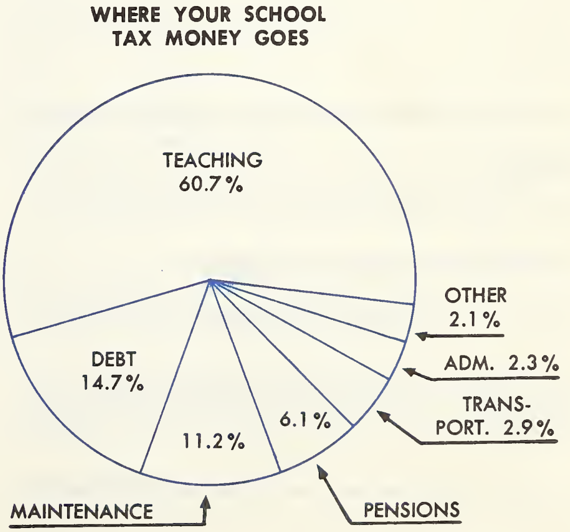
5. What is the significance of this graph as a whole?

____

6. Using the attendance figures for your school, make a line graph to show the changes in the number of absentees each day for one week. Show the number of absentees on the vertical scale and the days on the horizontal scale. Label each scale and give your graph a title. Prepare five questions about your graph. Do this work on a separate piece of paper.

Reading a Circle Graph

The circle graph or "pie" graph was used in a recent election to explain school costs to the voters.



1. What is the subject of this graph? ________

____

____

2. What do the numbers mean? ________

____

3. What do the labels for each section of the graph represent? ________

____

____

4. Which item requires the greatest amount of money? ________ Which item requires 11.2% of the money? ________

5. The Thompson family pays $250 per year in school taxes. How much of the $250 goes to each item? Name the four largest items from largest to smallest and write the amount beside each

(a) ____________________ (b) ____________________

(c) ____________________ (d) ____________________

6. What new insight did you get as a result of studying this graph as a whole? ____________________

After working so carefully with these graphs you have found out how much one can *read* from a graph. Continue to use these techniques whenever you meet a graph in your reading. They will help you to get an abundance of worthwhile information and insights.

HOW TO READ TABLES

Numerical tables grew out of the problem of how to present a series of numbers related to one idea in a systematic way. The table owes its popularity in present-day reading material to two factors: it occupies little space, and it presents information in a compact, easy-to-grasp form. Tables are not as interesting as graphs, and they are more difficult to read. Tables, however, do have one advantage over graphs—they usually are more accurate.

Here are some guides to help you in reading tables.

1. Read the title thoughtfully.
2. Find out what items are compared and in what way they are compared.
3. Decide which columns tell the most or are most meaningful.
4. Compare the items in terms of data presented in the most meaningful columns.
5. Interpret the meaning of the table as a whole. See if you can account for the variation in the size of the numbers in the different columns.

Try using these procedures in reading the tables that follow.

Table I

FREQUENCY TABLE SHOWING VALUE OF TICKETS SOLD BY INDIVIDUAL TENTH GRADE STUDENTS FOR THE HIGH-Y ANNUAL CARNIVAL.

DOLLARS' WORTH OF TICKETS SOLD	NUMBER OF STUDENTS (EACH SELLER GETS 1 TALLY)
$200 - $249	////
150 - 199	𝍸 //
100 - 149	𝍸 𝍸 𝍸 //
50 - 99	𝍸 𝍸 𝍸 //
0 - 49	𝍸 𝍸

1. What does the title tell you about the subject of this table? ____________________

2. What two items are compared? ____________________

3. Which columns have the largest tallies? ____________________

4. How many sellers are there altogether? ______ How many sold between $50 and $99 worth of tickets? ______ How many sold less than $150? ______

5. What conclusion might you draw about the 4 students in the top group? ____________________

6. On a separate piece of paper make a vertical bar graph showing the number of tallies or the "frequencies" in each group. Leave no space between the bars. A graph in which there is no space between the bars is called a *histogram.*

Table II[6]

MAJOR SOURCES OF STUDENT INCOME, 1952-53

AVERAGE INCOME RECEIVED FROM VARIOUS SOURCES BY 15,036 FULL-TIME COLLEGE STUDENTS IN 110 INSTITUTIONS.

SOURCES OF FUNDS	AVERAGE AMOUNT ALL STUDENTS RECEIVED	TOTAL NUMBER OF STUDENTS	MEDIAN FAMILY INCOME
LONG-TERM SAVINGS	$ 695	6,419	$5,067
FAMILY CONTRIBUTIONS:			
PARENTS	765	11,139	5,349
OTHER	221	2,110	4,150
SUMMER EARNINGS	395	5,223	4,864
EARNINGS THIS YEAR	413	9,104	4,768
SCHOLARSHIPS	645	3,428	4,498
VETERANS' BENEFITS AND REHABILITATION	1319	1,049	3,772
BORROWED FROM COLLEGE OR ELSEWHERE	820	1,129	3,800
GIFTS AND OTHER SOURCES	320	4,392	4,600

1. What is the title of Table II? ______________________

____

At what level of education are the students who are involved? ______________________

2. Which source of funds do most students use?

____

3. Which source provides the highest average amount of money? ______________________

4. What is the median family income of the group of students reporting long-term savings? __________

5. What significance does this table have in planning the finances of your college education? __________

____

6. Prepare a simple table showing sources of income of students in your class. Include such things as allowances, part-time jobs, gifts, and so on. Do not include median family income.

Table III

POPULATION BY SPECIFIED AGE GROUPS, 1951-61

AGE GROUP	POPULATION 1961	PERCENTAGE DISTRIBUTION 1961	PERCENTAGE INCREASE 1961
TOTAL	18,238,247	100.0	30.2
0 - 4	2,256,401	12.4	31.0
5 - 9	2,079,522	11.4	48.8
10 - 14	1,855,999	10.2	64.1
15 - 19	1,432,559	7.9	35.4
20 - 24	1,183,646	6.5	8.7
25 - 34	2,481,107	13.6	14.1
35 - 44	2,389,885	13.1	28.0
45 - 54	1,878,504	10.3	33.5
55 - 59	705,835	3.8	23.7
60 - 64	583,635	3.1	15.3
65 - 69	487,102	2.7	12.4
70 and over	904,052	5.0	38.5

1. What is the title of this table? ______________________

____

____

2. How are the age groups arranged? ______________________

____

3. Which age group had the greatest total? __________

____

4. How many people were under 20? __________

____

5. Give one general conclusion you can draw from this table about the per cent of the different age groups living in Canada. ______________________

____

---

[6] Table taken from *Second Report to the President*, The President's Committee on Education Beyond the High School, July 1957, Washington, D.C.

INCREASING YOUR MATHEMATICS VOCABULARY

The words below are among those that appear most often in *mathematics* books at your level. Probably you know how to pronounce many of these words already. But study the pronunciation of each one anyhow just to make sure that you know how to pronounce it *correctly*. And study the meaning carefully to make sure you know what each word means when used in the special field of mathematics.

Pronounce each word to yourself, saying it distinctly. Then read the meaning of the word and think about it as it is used in *mathematics*.

axiom ăk′sĭ *ŭ*m	A proposition or principle on which people in general agree.
binomial bī nō′mĭ *ă*l	In algebra, an expression of two terms connected with a plus or minus sign.
bisect bī′sĕkt′	To divide into two equal parts.
congruent kŏng′grŏŏ *ĕ*nt	In geometry, corresponding or equal in all parts; said of figures.
construct k*ŏ*n strŭkt′	To make a figure of algebraic value or relation by points, lines, or curves, using a compass or straightedge.
degree dė grē′	In algebra, rank defined by the sum of exponents: a^2b^3c is a term of the sixth *degree*.
depreciation dė prē′shĭ ā′sh*ŭ*n	A decrease in value.
diagonal dī ăg′ȯ n*ă*l	Running across from corner to corner; having a slanting position.
dimension d*ĭ* mĕn′sh*ŭ*n	Measure in a single line, as length, breadth, height, circumference.
equidistant ē′kwĭ dĭs′t*ă*nt	Equally distant.
equivalent ė kwĭv′*ȧ* l*ĕ*nt	In geometry, equal in value.
expenditure ĕks pĕn′dĭ t͝ûr	A paying out of money.
exponent ĕks pō′n*ĕ*nt	In algebra, a symbol written at the right above another symbol, denoting how many times the latter is repeated as a factor.
hypotenuse hī pŏt′ė nūs	In geometry, the side of a right-angled triangle that is opposite the right angle.
monomial mȯ nō′mĭ *ă*l	In algebra, that which consists of but a single term.

To see how well you know the meaning of the words, choose one word to write in each of the blank spaces below. Add s, if necessary, to form plurals.

1. Mr. Harvey paid $3,000.00 for his car when new. It is now worth $2,000.00. There has been a ____________ of $1,000.00.

2. With a compass and a straightedge John was able to ____________ a regular hexagon.

3. "Whatever you do to one side of an equation you must do to the other side also." This is a generally accepted principle or ____________.

4. The term $x^3y^4z^2$ is a term of the ninth ________.

5. The ____________ of the room were 15 feet by 10 feet.

6. Lines A and B were exactly the same length. The two lines were ____________ in length.

7. This expression has two terms: $x^2 + y$. It is a ____________.

8. If triangle A could be placed on top of triangle B, they would fit together exactly. These two figures are ____________.

9. In this expression $x^2y = y^4$, the number 4 is an ____________.

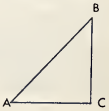
10. The expression a^2 has one term. This expression is a ____________.

11. Jane cut the circle into two parts. She had been told to ____________ it.

12. Tom's new suit had stripes in it which ran in an oblique direction. They were ____________.

13. Mrs. Stewart didn't have enough money to pay her bills. Her ____________ had been greater than her income.

14. What is the name of the line AB in this right-angled triangle? ____________



negative nĕg′ȧ tĭv	In mathematics, designating a quantity to be subtracted; minus.
notation nȯ tā′shŭn	The system of numbers, letters, and signs used in arithmetic and algebra to express number, quantity, or operations.
polynomial pŏl′ĭ nō′mĭ ăl	An expression of two or more terms.
positive pŏz′ĭ tĭv	In mathematics, numerically greater than zero; plus.
proportion prȯ pōr′shŭn	The relation of one portion to another or to the whole, or to another thing.
protractor prȯ trăk′tẽr	An instrument for measuring angles on paper.
quadrant kwŏd′rănt	A fourth part or quarter of a figure.
radical răd′ĭ kăl	Pertaining to a root or radical part.
segment sĕg′mĕnt	In geometry, a part cut off from a figure, line, or plane.
signed number sīnd′nŭm′bẽr	In algebra, a number with a plus or minus sign before it.
spacious spā′shŭs	Vast in extent; of great space.
straightedge strāt′ĕj′	An instrument used in geometry for drawing straight lines.
symmetry sĭm′ė trĭ	Correspondence of parts on both sides of a dividing line.
theorem thē′ȯ rĕm	A general statement which has been proved or whose truth has been conjectured.
trinomial trī nō′mĭ ăl	An algebraic expression consisting of three terms.

15. In the expression $x^2 - 2x = 0$, $-2x$ represents a ____________________ quantity.

16. A point which is exactly in the middle of a circle is ____________________ from all points in the circumference.

17. The expression $5x + 10 + 3 - 2x = 26$ has several terms. It is a ____________________.

18. The Roman people worked out a system of ____________________ which we still use.

19. Bill's assignments required that he measure several angles. He got a large piece of paper and his ____________________.

20. Paul cut the circle into four equal parts. Each part was a ____________________.

21. In algebra a special symbol is used to show square root, as $\sqrt{36}$. This symbol is called a __________ sign.

22. If Bob folded together the two sides of a figure that he had, placing the fold at the exact center of the figure, the right side would fit exactly over the left side. The figure had ____________________.

23. When George began work in geometry, he had to buy a new instrument for drawing straight lines. This instrument was called a ____________________.

24. Henry's teacher asked him to measure off a ____________________ on a line equal to the base of a triangle which he had before him.

25. Mr. Stone's new home had a living room 30 by 40 feet. It was very ____________________.

26. What kind of number is +6? ____________________

27. Mr. Stone had a waist line of 42 inches. He was out of ____________________.

28. This proposition has been established: "If two angles of a triangle are equal, the sides opposite those angles are equal." This is a ____________________.

29. This expression has three terms in it: $a^2 + 2ab + b^2$. It is a ____________________.

30. These numbers are ____________________ numbers: -3, $+5$.

CHAPTER 14

USING READING SKILLS IN WORKING WITH EXAMINATIONS

PREPARING FOR EXAMINATIONS

Making poor, good, or excellent grades on tests and examinations depends almost entirely upon your reading skills—the skills that you use in studying in the first place, the skills that you use in reviewing for examinations, and the skills that you use in reading the examination, itself. You have had practice throughout this book on reading skills for use in your regular day-by-day study. In preparing for and taking examinations you can make good use of all the skills previously discussed, but you need to use some of these skills in different and special ways. In this chapter suggestions will be given for using these same reading skills with which you have been working to the best advantage in all of your work in connection with tests and examinations.

When and Where to Review

The place, the time, and the schedule for reviewing are important also. The place and time furnish the background in which your review skills can operate most favorably, and your schedule furnishes the "machinery" that carries you through to completion of your study in preparation for the examination. These topics will be discussed before the "How to Review" topic in which the skills themselves are explained.

When to Review

Your best preparation for a test is, of course, your day-by-day study. If you use the reading skills upon which you have been practicing in this book in doing your daily assignments, you will have a good grounding of information to start with when examination time comes. Information read several weeks or months preceding the examination, however, often does become dim, and review is necessary.

Some students leave their reviewing work for end-of-the-semester examinations until the last night before each examination is given. This is a very undesirable practice. Review work should be started at least three weeks before the examinations are to take place. When a student waits until the last minute to cram for a test, he usually works until very late at night and deprives himself of sleep which would have contributed to his physical fitness the next morning. Furthermore, a one-night cramming session in getting ready usually results in nervousness, anxiety, and worry. The student hasn't time to prepare study aids in the way of outlines and notes. He's afraid he hasn't time to review *all* of the subject matter covered and often dips into it here and there, pulling out and memorizing a few facts without visualizing them in their relation to a larger whole. Not having time to cover all of the subject matter thoroughly, he doesn't have an opportunity to find out just what his weak spots are or to go back and review them. As a result he goes to the examination next morning so fatigued and so upset mentally that he isn't able even to do justice to those facts he does know.

If the review is spread over a three-week period, the stress that accompanies one-night cramming can be avoided. Furthermore, the student will be working in harmony with proved principles of psychology. Experimentation has shown that we remember more, and remember it with greater accuracy, if we review at spaced intervals of time.

Planning Spaced Review Periods

Your review schedule should be carefully planned. Map out your activities and budget your time for each of the two weeks preceding examinations, and for the examination week itself. Then live up to these schedules!

Where to Study

When you are ready to review for examinations, find a quiet place. Don't try to study in the living room with television or radio competing for your interest. Don't work on the dining-room table with your mother going about her household duties, the telephone ringing, people coming to the door, and so on. Go to your own room and close the door, or find an unoccupied room somewhere in the house and go to that.

Choose a straight-backed chair. Don't lounge in an overly comfortable, upholstered chair, or try to study in bed. You have a job to do. Sit up, keep alert, and attack it in a businesslike way.

Be sure that you are well supplied with a smooth-writing pen, sharpened pencils, erasers, notebook, and plenty of paper, as well as the textbook or other books in which you are to review subject matter. With all of these materials at hand, there will be no temptation to try to get along without some of them when needed. Nor will you find it necessary to interrupt your study to go out and hunt up some of these things.

With the time and place decided upon, and the schedule planned, you are ready to begin review of the subject matter, itself. Study forms for taking notes and skills to use in studying will now be discussed.

Preparing and Using Study Forms

Writing notes on subject matter covered in definitely organized study forms is by far the surest way of reviewing for an examination. This technique is especially valuable for several reasons: (1) preparing and filling in study forms enables you to organize the material; (2) writing the notes helps to impress the information in your memory; (3) the filled-in study forms furnish a most effective basis for later review and are easier to work with than the complete text in the book; (4) when taking the examination, the recall of one of these forms as a whole serves as a frame-of-reference, enabling you to pull out any one fact that you may need in an objective-type test, or an organized foundation to build upon in writing the answer to an essay question.

It takes time to pick out and write the information from the textbook that is needed in preparing the study forms. But while extracting the necessary information for your study form, you *are* studying for the examination in a very effective way. At the same time you are providing yourself with brief but organized material to use during your successive review periods.

The basic idea in preparing a study form is to enable you to have a "picture" of an entire topic or subject with the ideas arranged in their right relationships. No matter what type of examination you are to take, you need to have clearly in mind the important topics treated in textbooks that you have covered or outside reading that you have done. But that's not all. You need also to know important details related to the main ideas or topics. If you take an objective test, several of the questions are apt to be based on details. If you take an essay test, you will need the details in writing a composition on the subject asked for. You can't lose, if you thoroughly grasp main topics together with their related details as complete clusters in themselves.

In working out a study form, organize it first in terms of the topics that you have covered in your textbook. Then, referring to your notebook, work into this study form any important points made in lectures or discussions that are not included in the textbook. Thus you will have before you an organized and integrated whole, which includes all of the information that you have had the opportunity to learn about a topic.

There are several different formats which you can use in preparing organized study forms in different subject fields. The most commonly used study form is that of the outline. You don't *always* need to use the ordinary outline form, however. There are other forms that are more useful in working with certain types of material. The format to use in organizing information for study purposes should be appropriate to the pattern of writing which the author uses. Some suggestions for formats will be made in this section.

Science. In preparing your study notes in science, the first thing to do is to identify the patterns of science writing. Then prepare your study forms accordingly. You will get ideas of formats to use by referring to the "Activities" based on science selections in this book, pages 81–98.

If you are studying science subject matter of the classification pattern, it is advisable to make a chart similar to the one on page 81. If it is the explanation-of-a-process pattern, with a diagram, list the steps briefly in your own words. Then see if you can draw and label a diagram of your own to illustrate the process. (See pages 88–89.) If it is a problem-solving pattern, then a format such as that used on page 84 would be most helpful. If it is an experiment, it is advisable to list the steps briefly and then write a short conclusion. (See page 98.)

In chemistry and physics, formulas are very important. List these formulas in your notebook, write the meaning opposite each formula, and then write the use of the formula. A classification chart is often useful in organizing formulas by their meanings and uses.

If the material with which you are working is of the detailed-information type that doesn't fall within any other distinctive pattern, then the regular outline or diagramming form will serve you best. You had practice in reading to find main ideas with their related details in Chapters 5 and 6. And you had practice in organizing information in diagram or outline formats in Chapter 6, pages 35–41. These forms are very useful in reviewing detailed information for examination. In review work, however, the diagram or outline usually should be in terms of a whole topic—not of single paragraphs. Use your skimming technique in locating the topic headings and details. The topic headings usually appear in boldface or italicized headings in your textbook.

In preparing an outline for review of a chapter, use the subject of the chapter for your Roman numeral heading, the italicized or boldface headings for your capital *A*, *B*, *C*, and so on, and then fill in your major details under the Arabic numerals *1*, *2*, *3*, etc. If you think minor details are important in some instances, fill them in under the major details with lower case lettering—*a, b, c,* and so on.

Once your outline of a chapter is finished, study it as a whole, fixing the entire structure in mind.

It is possible that you may use all of the study forms discussed above while reviewing different sections of the same chapter in science. In that case all of your notes for that chapter should be kept together in your notebook in the same order in which the discussions appeared in the text.

History. In reviewing history, as in science, make a study form in your notebook that best corresponds to the pattern or section of content with which you are working. If it is largely a discussion of causes and effects, you might organize your notes according to a pattern similar to the one on page 115. If the discussion is concerned with a description of several different topics in the same category, then you can do no better than to prepare notes in a format that will enable you to make comparisons and contrasts as on pages 108–109. If the subject matter embraces a discussion of trends or developments, with dates, then there is no better way of preparing study notes than to make a time line similar to the one on page 112. If the content is of the detailed-information type, then prepare the outlines as discussed in Chapter 6, pages 35–41. For sections in connection with events that have two sides to them, sections in which the author's opinions are expressed, sections in which results would have been different if a different course had been pursued—think about the content critically, pass your own judgments upon what is said, and make notes on your thinking. Then if your teacher asks you to "evaluate" the content of one of these passages, you'll be ready. Review pages 116–119 on "How to Read Critically."

Mathematics. In mathematics try working a few of each of the types of problems you have had. If you find them difficult, use some form of writing the steps, numbers, or formulas as suggested on pages 154–156. Make a list of formulas with their meanings. Make up some problems of your own and see if you can apply the formulas. If the examination is in geometry, make several different types of constructions with measurements and work out problems in regard to angles, areas, and so on. You no doubt will be asked to state some of the rules given in your text. In reviewing write a list of these rules in your notebook with an example to illustrate the meaning of each one.

If there are several new specialized words in the chapters that you have covered, list these with their meanings and perhaps a complete sentence using each word.

English. In English you are apt to get some objective-type questions in which you will be asked to complete, correct, or cross out items in statements about language usage, punctuation, and capitalization. Write in your notebook a list of rules or statements about each item of this type that you have studied, and write a sentence of your own to illustrate each one.

Just in case you might be asked to write a composition of your own choice, think up a good topic and jot it down in your notebook. Be sure it is a topic in which you are interested and about which there are several things you would like to say. Also consider whether the topic is of such a nature that you can write a rounded composition about it in the time at your disposal during the examination period.

Literature. In literature there are some general procedures to follow in order to prepare for an examination. If you have been studying different types of literature, then it would be a good idea to write the names of the different types in your notebook with the names of some pieces of literature that represent each type. You may have some matching tests on "who wrote that," so you had better have notes on authors whose selections you have studied together with titles of some of their writings. You may have some objective-type tests on setting, plot, characters, significant quotations, and general significance of stories you have read in connection with your literature class. You probably won't need notes for study in order to be ready to answer questions of this type, unless you think it is desirable to write a few significant quotations from some of the selections.

A good share of your literature test may have to do with your *appreciation* of literature. There is not much you can do in advance to prepare for this, except perhaps to reread stories, poems, and plays quickly, skimming for high points of style, theme, or meaning. Try to summarize the main idea of each selection in one sentence. This will help a lot.

Reviewing Directly from Textbooks

There may be some books or parts of books which you believe you can review adequately without making organized notes.

In reviewing directly from the book you will use all of the common reading skills which you have been practicing in this text on reading. You will *preview* (Chapter 3) chapters to grasp the topics treated within the chapter. You will pick out *main ideas* (Chapter 5) and *related details* (Chapter 6). You will use your skill in pronouncing and getting the meaning from words (Chapter 9), particularly specialized words that are apt to enter into the examination. If you are to cover all of the material, you most certainly will need to use your fast reading (Chapter 2) and skimming skills (Chapter 8). Specifically in doing general review work: (1) skim a chapter for headings, (2) read rapidly to find main ideas and related details, (3) fix them in your mind as suggested under "Memorizing for Examinations."

In working with the different subjects you will identify the patterns of writing. Then you will try to organize the subject matter mentally by classifying it, finding the steps in a process, following a time-line, and so on, according to the pattern in which it is written.

Taking brief notes on a piece of paper as you read, using just a word or two to represent each item in the organized whole, is a quick way of providing cues for review. If you own your textbook, underlining the main idea in sections of text under boldface or italicized headings is often useful. These underlined sections quickly catch the eye in reviewing and save one the trouble of reading through all of the text in repeated reviews of the material. If this technique is used, it is necessary to select very carefully the important thought to be underlined. If your school forbids writing or underlining in textbooks, write the main headings in your notebook.

Reviewing from the book, then writing a summary to use for review purposes, is also effective.

Memorizing Subject Matter for Examinations

You were given practice in remembering what you read in Chapter 7. Everything that you learned in that chapter should be especially valuable to you when preparing for examinations. It might be worth your while to go back and review this entire chapter as a first step in getting ready for your next examination.

At this point, however, we shall mention briefly some of the factors that contribute to remembering what you read and apply them particularly to the examination situation.

First, the matter of *interest* is important. Try to be interested in the subject matter you are memorizing.

Having a *purpose* for remembering what you read is another contributing factor. Certainly you have an immediate purpose for remembering the subject matter to be covered—that of passing the examination with a creditable grade.

As we said in Chapter 7, "*Concentration* is a necessity." That is why it is recommended that you study in a room that is as free as possible from distractions. But you need more than the right physical setting. You need the *will* to keep your mind on your review work and not let it ramble.

Selectivity is a tremendously important factor in preparing to recall information for an examination. You can't remember *everything* in a book. Select *very carefully* what you are going to lay away in your memory for the examination.

Association of one thing with another is a strong aid to memory. That is why it is valuable to use some of the study forms suggested on pages 173–174.

Use the *"wholes" method.* Don't try to memorize isolated facts.

Use *several senses. Write* the subject matter up in an organized format. *Say* it over aloud. *Draw* diagrams or sketches. *Make up a test* of your own on the material.

Repetition is necessary in memorization. Repeat what you want to remember several times.

Distributed practice is effective. Experiments have shown that you are much more apt to recall something that you have studied again and again at spaced intervals than those things you have studied just once.

To sum up, the most effective procedures to use in memorizing for an examination are:

1. Try to work up interest in the worthwhileness of the subject matter.
2. Set for yourself the purpose of mastering the subject matter so well that you will make a very high grade on the examination.
3. Concentrate wholly on the job while you are studying.
4. Make use of your will power. *Will* to lay away the facts for recall.
5. Select carefully those things which are worth remembering.
6. Associate facts together in their right relationships.
7. Use the "wholes" method.
8. Repeat the information to be memorized several times at spaced intervals.
9. Use several different senses as avenues to your memory.

Now you will have an opportunity to try out the review suggestions that you have been reading about in this chapter.

1. Prepare a schedule for reviewing what has been said. Plan your schedule so that you can review at three different times at least before taking the test.
2. Prepare a study form and use it in organizing your notes. Do this in one of your planned study periods. Since the subject matter you have been reading gives detailed information with a few lists, the outline format will be the best one to use in your review. Write the large capitalized center headings for your Roman numerals I and II; then work down to the boldface headings for your Arabic numerals, and the italicized headings for the lower-case lettered items, such as (*a*), (*b*), (*c*), and so on.
3. Use your filled-in study form for review purposes during two or three spaced periods.
4. Take the test that follows and see if you can make a grade of 100 on it.

ACTIVITY 1

When you have finished your review, check yourself on what you have learned so far about preparing for examinations. Write the correct answer to each question on the blank space provided for it.

1. The grade you make on an examination depends almost wholly on your ____________________ skills.

2. It is advisable to spread your review over a ____________________ week period.

3. Cramming on the last night before an examination is ____________________.

4. When reviewing a science or history article the first thing to do is to ____________________.

5. What is a study form? Use your own words. ____________________

____

____

6. Four values resulting from preparing a study form are:

a. ____________________

b. ____________________

c. ____________________

d. ____________________

7. Five common reading skills needed in review work are:

a. ____________________

b. ____________________

c. ____________________

d. ____________________

e. ____________________

8. Some patterns of content in science for which you would use a study format other than the regular outline are:

a. ____________________

b. ____________________

c. ____________________

d. ____________________

e. ____________________

9. Mention at least 6 factors which contribute to memorization of subject matter for an examination.

a. ____________________

b. ____________________

c. ____________________

d. ____________________

e. ____________________

f. ____________________

Allow a score of 4 for each correct response. Thus No. 6 will receive a total score of 16 if you gave all 4 values correctly; a score of 12 if you gave 3 correct responses; and so on.

Score ____________________.

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JAN 14 RETURN
EDUC JL 12 '74
JUL 14 RETURN
OCT 28 RETURN
EDUC JN 23 '78
JUN 13 RETURN
EDUC '78
EDUC
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DUE Educ OCT 10 '78
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